The Book of Games

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FEBRUARY 1983

Wondering just what to do with the micro you got for Christmas? At a loose end when it comes to game ideas? Never fear – the Book of Games is here!

The *Computer and Video Games* office is regularly deluged with programs from readers – more than enough to keep the magazine full for the next few centuries. So in order to bring you some of the best games that we've received – but which have not been published within the pages of C&VG's – we decided to put them together in this bumper bundle of post-Christmas fun.

All the games have been tried and tested by our busy team of reviewers so they gught should be few and far between. We also tried to keep the programs short and sweet with the exception of World Cup. We thought it was worth giving more space to. It's a version of the game first published for the Sharp in our June issue – converted here for the BBC machine. It proved popular with Sharp owners – so now BBC fans will get a chance to have a crack at the big match.

CONTENTS

DRACULA

BY STUART EARL

RUNS ON A ZX81 IN 16K

Listen to the children of the night . . . how sweet they sound. Ahh. there you are my dearrrrs. We must return to our resting place in Castle Dracula.

But look! There's the priest again. He thinks he'll finish us this time. But we'll defeat him yet!

In this charming resurrection of the Dracula story you play the evil count who is returning to his castle after a night out. You must evade the priest and avoid the garlic to reach your castle before sunrise which will spell your doom.

The program includes full instructions and has a high score feature which allows players to enter their names.

```
1 LET Q=0
2 LET X=0
3 LET Y=0
4 PRINT AT 0,21
5 NEXT
6 PRINT AT 0,
7 PRINT AT 10,
8 LET X=0
9 LET X=1 TO 6
10 PRINT

40 PRINT AT 0,27,
50 PRINT AT 10,26,
60 LET D=
70 LET D=
80 LET D=
90 LET D=
100 LET R=INT (RND*10)+1
110 LET B=INT (RND*26)+1
120 LET R=
130 LET R=INT (RND*20)+1
140 LET X=INT (RND*24)+1
150 LET Y=INT (RND*24)+1
160 LET X=INT (RND*24)+1
170 LET X=INT (RND*20)+1
180 LET X=INT (RND*24)+1
190 LET X=INT (RND*20)+1
200 PRINT AT X,Y
210 PRINT AT X,Y
220 PRINT AT X,Y
230 PRINT AT X,Y
240 PRINT AT X,Y
250 PRINT AT X,Y
260 PRINT AT X,Y
270 PRINT AT X,Y
280 PRINT AT X,Y
290 PRINT AT C,D
300 SLOW
310 IF INKEY$="1" THEN LET D$="
320 IF INKEY$="0" THEN LET D$="
330 IF D$="" THEN LET D$="
340 LET C=C+(INKEY$="5")-(INKEY
$="8")
350 LET D=D+(INKEY$="8")-(INKEY
$="5")
360 PRINT AT C,C;D$
370 IF A<C AND V=0 THEN LET A=A
380 IF A>C AND V=0 THEN LET A=A
390 IF B<D AND V=0 THEN LET B=B
400 IF B>D AND V=0 THEN LET B=B
405 PRINT AT A,B;"
410 IF C=A AND D=B THEN GOTO 10
420 PRINT AT C,D+1;"
430 PRINT AT C,D;"
440 LET D=D-2
450 IF D<0 THEN LET D=
460 IF D>22 THEN LET D=
470 IF D<0 THEN LET C=
480 IF D>22 THEN LET C=
490 IF D>0 THEN LET C=
500 IF D>10 THEN GOTO 520
510 GOTO 250
```

```
AND (C=I AND D+1=P) OR (C=I AND D+1=J) OR
(C=K AND D+1=L) OR (C=M AND D+1
=N) THEN GOTO 1000
520 IF (A=X AND Y=
AND B+1=P) OR (A=I AND B+1=J) OR (A=
AND B+1=L) OR (A=M AND B+1=N
) THEN LET
530 LET G=INT (RND*7)+4
540 PRINT AT H,G
550 IF C=A AND D+1=G AND Z=2
THEN GOTO 1000
560 PRINT AT 0,0;T;AT 0,10;"HIG
565 PRINT AT H,G;"
570 IF Z=2 THEN LET T=T-1
580 IF T=0 THEN LET T=T-2
590 IF T=0 THEN GOTO 1000
600 IF C=M AND D=P THEN GOTO 2
610 GOTO 250
1000 PRINT "YOU ARE DEAD.SCORE
1001 IF 100-T>0 THEN PRINT "NAME
1 TO 10 LETTERS"
1010 IF 100-T>0 THEN PRINT N$
1020 IF LEN N$ THEN GOTO 1001
1100 IF 100-T>0 THEN LET Q=100-T
1200 PRINT "ANOTHER GO"
1210 IF INKEY$="Y" THEN GOTO 1200
1220 IF INKEY$="Y" THEN GOTO 12
1230 CLS
2000 PRINT 3
2010 PRINT "WELL DONE YOU HAVE
REACHED THE CASTLE"
2020 PRINT "ENTER YOUR NAME"/T*2
TO 5 LETTERS
2060 IF T>20 THEN PRINT "NAME "*2
2070 IF T>20 THEN INPUT N$
2080 IF LEN N$>15 THEN LET Q=T
2090 GOTO 1100
2100 PRINT 1100
EARL
7010 PRINT "          DRACULA BY S.

7020 PRINT "5=LEFT    6=RIGHT
7030 PRINT "
7040 PRINT " YOU TAKE THE ROLE O
F DRACULA. YOU HAVE 100 SEC
ONDS TO GET TO YOUR CASTLE. YOU
ARE THE     THE VILLAGERS HAVE A
     THE CROSS    YOU MUST CARRY THE
     THE HO     YOU     WHICH IS SHUT TO
YOU ONE     IF YOU ARE SUCCESSFU
L     DEAD     STOP IF NOT     YOU
ARE     IF YOU FALL IN A
DEAD     IF YOU ARE
TURN     IF YOU PRESS N YOU
IN A     A BAT AND CAN'T     THE
WHITE YOU CAN     BE
TWICE AS     IF YOU BACK     A BAT
AND YOU     QUICK.PRESSING     DU
YOU ARE     IF DAYLIGHT BREAKS
DOOR     IF YOU GET TO THE D
OOR     OUT FOR THE SWINGING
GARLIC
7060 PRINT "PRESS N/L"
7070 INPUT A$
7080 CLS
9100 SAVE "DRACULA"
9200 GOTO 7000
```

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WORDFIND

The object of Word Find is to guess the hidden word in the computer's memory by your opponent. You simply have to type in your choice of letters which will gradually reveal the secret word.

There is a catch however. Just like the pen and paper game Hangman an unfortunate character is gradually progressing toward his doom each time you make a wrong guess.

Will you be able to beat your opponent — and the Hangman — before the poor little chap starts to dangle?

The 's' character is a clear screen command and it appears in lines 500, 520 and 530. The 'c' in line 1035 should be typed in inverse video.

```
5 OPEN #1,4,0,"K:"
10 DIM ANSWER$(20),GUESS$(1),ALPHABET$(2
6),USER$(20),CLUE$(15)
20 GOTO 500
30 GRAPHICS 7
35 COLOR 3
40 IF X=1 THEN PLOT 20,79:DRAWTO 20,20
42 IF X=2 THEN PLOT 10,79:DRAWTO 20,20:
DRAWTO 30,79
43 IF X=3 THEN PLOT 20,30:DRAWTO 30,20
46 IF X=4 THEN PLOT 20,20:DRAWTO 30,20
50 IF X=5 THEN PLOT 45,20:DRAWTO 65,25:
FOR I=1 TO 35:COLOR I:READ A,B:PLOT A,B:
NEXT I:RESTORE
60 DATA 26,62,64,26,65,26,66,26,67,26,62
,27,63,27,64,27,65,27,66,27,67,27,68,27,
62,28,63,28,65,28,67,28,68,28
70 DATA 62,29,63,29,64,29,66,29,67,29,68
,29,62,30,63,30,64,30,65,30,66,30,67,30,
68,30,63,31,67,31,64,32,65,32
80 DATA 66,32
90 IF X>6 THEN COLOR 2:FOR I=61 TO 69:F
OR J=34 TO 40:PLOT I,J:NEXT J:NEXT I
100 IF X>7 THEN COLOR 1:PLOT 60,34:DRAW
TO 57,46:DRAWTO 58,39:PLOT 60,35:DRAWTO
58,39:DRAWTO 58,46
110 IF X>8 THEN COLOR 1:PLOT 70,34:DRAW
TO 73,39:DRAWTO 73,46:PLOT 70,35:DRAWTO
72,39:DRAWTO 72,46
120 IF X>9 THEN COLOR 1:PLOT 61,45:DRAW
TO 69,45:FOR I=45 TO 64:COLOR 2:PLOT I,4
6:DRAWTO I,57:NEXT I
125 IF X>=9 THEN COLOR 1:PLOT 62,58:DRAW
TO 63,58:PLOT 61,59:DRAWTO 64,59
130 IF X=10 THEN COLOR 2:PLOT 45,46:DRAW
TO 65,50:FOR I=66 TO 69:PLOT I,46:DRAWTO
I,57:NEXT I
135 IF X>=10 THEN PLOT 67,58:PLOT
68,58:PLOT 66,59:DRAWTO 69,59
140 IF X<10 THEN 490
145 FOR T=1 TO 750:NEXT T
150 GRAPHICS 1+16:COLOR 1:SETCOLOR 4,0,0
:SETCOLOR 4,0,8:? #6!"THE ANSWER WAS ":?
#6:? #6!ANSWER$
160 FOR I=1 TO 5:FOR J=1 TO 200:SOUND 0,
J,8,10:NEXT J:SOUND 0,0,0,0:NEXT I
180 RUN
490 FOR T=1 TO 500+50*X:NEXT T:SOUND 0,0
,0,0:GOTO 600
500 ? "WORDFIND":? :POKE 752,1:? "Do y
ou want instructions (Y or N) ?":GET #1,K
510 IF CHR$(K)="Y" THEN GOSUB 1000
515 ANSWER$=""
520 ? :POKE 752,1:? "INPUT YOUR WORDS":?
(not more than 20 letters).":? ? "
522 FOR I=1 TO 20:GET #1,K:ANSWER$(I,I)=
CHR$(K):IF CHR$(K)="*" THEN ANSWER$(I,I)
="":GOTO 527
524 NEXT I
525 IF LEN(ANSWER$)>20 THEN 515
527 CLUE$=""
530 ? :? "INPUT YOUR CLUE":? "(not more
than 15 letters)":INPUT CLUE$
532 IF LEN(CLUE$)>15 THEN CLUE$="":GOTO
527
540 ANSWER$="":FOR I=1 TO LEN(ANSWER$):USE
R$(I,I)="-":IF ANSWER$(I,I)=CHR$(32) THE
N USER$(I,I)=CHR$(32)
545 IF ASC(ANSWER$(I,I))<65 OR ASC(ANSWE
R$(I,I))>90 THEN USER$(I,I)=ANSWER$(I,I)
560 NEXT I
570 X=0:Y=1
600 GRAPHICS 2:COLOR 1
610 POSITION 0,3:? #6;USER$
620 POSITION 0,9:COLOR 2:? #6;"CLUE: ":CL
UE$
630 ? :? "LETTERS USED: ":ALPHABET$:? "I
NPUT YOUR GUESS":GET #1,K:GUESS$=CHR$(K)
:ALPHABET$(Y,Y)=GUESS$:Y=Y+1
635 IF Y>26 THEN Y=26
640 FOR I=1 TO LEN(ANSWER$):IF GUESS$=AN
SWER$(I,I) THEN USER$(I,I)=GUESS$:Z=Z+1
:POSITION I-1,3:? #6;GUESS$:F=1
650 IF F=1 THEN GOTO 665
660 NEXT I:GOTO 670
665 FOR J=1 TO 200:SOUND 0,50,10,14:NEXT
J:SOUND 0,0,0,0:F=0:GOTO 630
670 IF GUESS$=ANSWER$ THEN GOTO 900
680 IF Z=0 THEN X=X+1:SOUND 0,200,4,12:G
OTO 30
690 Z=0
700 GOTO 630
900 ? "WORDFIND"
910 GRAPHICS 2+16:FOR I=1 TO 4:FOR S=1 T
O 15:SETCOLOR 0,S,12/T:POSITION 0,3:? #6
!"CORRECT":SOUND 0,200,S,10,10
915 SETCOLOR 4,16-S,7:POSITION 0,6:? #6!
ANSWER$:SOUND 1,200/T,10,10
920 FOR TIME=1 TO T:NEXT TIME
930 NEXT S:NEXT T
940 FOR I=1 TO 60:SOUND 1,0,0,0:RUN
1000 ? :? "The object of WORDFIND is to
guess the ":? "hidden word entered by yo
ur opponent"
1010 ? :? "Your opponent must enter the
word(s) ":? "his choice letter by letter
and ":? " press '*' to end it."
1020 ? :? "You must guess letters in tur
n. ":? "To do this simply type the lette
r of your"
1025 ? :? "choice."
1030 ? :? "The computer will do the rest
."
1035 ? :? "PRESS C TO CONTINUE":GET #1,K
:IF CHR$(K)="C" THEN RETURN
1040 GOTO 1035
```

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INVADERS

BY ANDREW FILBY

RUNS ON A SPECTRUM IN 16K

Those nasty aliens are back again. And they are as dangerous as ever.

You can defend yourself using your laser base. But you can only fire three times at any one alien. The good news is that you can blast their missiles with your laser. The bad news is that those missiles will home in on you.

You may also use the life saving hyperspace button - but only six times. And each time you press the panic button your score decreases.

The lower the alien is before you blast him the more you'll score - but you only have five lives to play with, so don't let them get too close! Use 'm' to move right, 'b' to go left, and 'n' to fire.

```
  2 LET vy=0: LET li=0: LET lo=
0: GO SUB 1000: LET k=2: BORDE
R 1
  5 DATA 0,0,BIN 00110110,BIN 0
0110110,BIN 00011100,BIN 00011
0,BIN 00111100,BIN 01011110
  6 DATA 0,0,BIN 00110110,BIN 0
0110110,BIN 00011100,BIN 001100
0,BIN 00111100,BIN 01011110
  7 DATA BIN 10001000,BIN 001010
00,BIN 10101010,BIN 00011100,BI
N 10001000,BIN 00010000,BIN 10
000001
  8 DATA BIN 00001000,BIN 00110
100,BIN 00011100,BIN 11111111,BI
N 11111111,BIN 11111111,BIN 111
0011,BIN 11000001
  9 DATA BIN 00011011,BIN 001101
111,BIN 00000011,BIN 11111111,BI
N 11111111,BIN 11111111,BIN 110
0110,BIN 11000011
  7 LET sc=0: LET rt=0: LET li=0
 10 PRINT "SCORE:";sc
 15 LET i=b10
 16 LET b=b10
 20 FOR i=0 TO 7: READ a: POKE
USR CHR$ (h)+f,a: NEXT f
 25 NEXT h
 26 PRINT AT 0,15," ";AT TAB 20
A, ;TAB 25,x; ;AT TAB 20 ;
 27 FOR g=5 TO 949
 30 LET k=RND*940+1
 35 FOR u=0 TO 21
 37 PRINT AT k,u;"
 38 PRINT AT k,v;
 60 LET sc=0
 61 IF RND<=.5 THEN GO TO 78
 62 IF l(uy THEN GO TO 21
 63 FOR g=INT (k+3.5) TO 21
 66 IF SCREEN$ (c+3,uy)="" TH
EN GO TO 400
 67 IF l(uy THEN LET vy=uy+1
 71 IF INKEY$="n" AND (f)=1 THE
N GO TO 500
 78 PRINT AT k,uy;"v"
 79 PRINT AT k,lo="  ";AT 21,l
 80 IF INKEY$="m" THEN LET l=l+
1.50
 90 IF INKEY$="b" THEN LET l=l-
1.50
100 IF l>31 THEN LET l=31
110 IF l<5 THEN LET l=5
190 NEXT u
195 NEXT i
200 STOP
201 PLOT 8+l+3,3
203 IF k>3 THEN GO TO 61
      BEEP .005,8
210 DRAW 0,ABS (8.3333333*k)-
125
440 DRAW OVER 1,0,ABS ((8.33333
33*k)-175)
445 IF SCREEN$ (k,l,0)="" THEN
GO TO 61
250 IF l(uy AND lo=1 THEN RETU
RN
300 GO TO 10
310 FOR f=1 TO 9: BEEP .02,f: NE
XT
315 LET sc=sc+ INT (100*k)
320 PRINT AT k,l-1,"
330 GO TO 191
395 PRINT ;AT 0,15,sc+5+10,;" "
420 FOR i=-10 TO 10
440 BEEP .005,i
448 BORDER RND+61
450 NEXT f
455 PRINT AT k,u;" "
460 PRINT AT 20,l;" ";AT 21,l-1
465 INK 2
470 LET l=l-1
480 IF l=1 THEN GO TO 500
490 GO TO 191
500 PRINT AT 10,9; INVERSE 1;"H
YPERSPACE"; INVERSE 0
501 FOR f=9 TO STEP -1
505 PRINT AT 21,l;"";AT k,u;
510 BORDER RND+1: BEEP .02,f
550 BEEP 3,-10
555 LET l=RND+31
556 LET sc=sc-INT (100/k)*2
557 PRINT AT 10,9;"
540 GO TO 191
800 PRINT AT 10,0; INVERSE 1;"
  YOU SCORED";sc;" "; INVERSE
1;" AND SURVIVED ";li;" ATTACK
WAVES
801 IF sc>hs THEN PRINT "YOU HA
VE beaten ";hs," HIGH SCORE OF
 ";hs: INPUT "Please input name"
"
802 PRINT n$;" has a high score
805 PRINT AT 21,0; INVERSE 1;"P
ress 'a' to play again"; INVERSE
810 RESTORE
811 RESTORE
812 PAPER 0: BORDER 1
815 IF sc>hs THEN LET hs=sc
816 LET i$=INKEY$
840 IF i$="a" THEN CLS : GO TO
2
850 GO TO 820
1000 BORDER 1: CLS : INK 7
1004 PRINT TAB 4; INVERSE 1;"SPA
CE ATTACK-©- A.FILBY; INVERSE
1010 PRINT "The object of the
game is to shoot down as many sp
ace ships as possible from y
our base"
1020 PRINT "At random the alien
s will fire at you,their bombs
will home in on you.If you ge
t on target you can go into
HYPERSPACE to be safe,but it wil
l decrease your score. The lo
wer an alien is the more points
 it is worth. You have 5 lives a
nd you can  move from side to s
ide at  1.5 times  as fast
as an alien."
1021 PRINT "You can useHYPERSPAC
E 6 times,but each time you use
 it you an alien 3 times-your laser
can stop 5 bombs"
1040 PRINT "Use 'm' to move rig
ht,'b' to movement and 'n' to fir
e"
1050 PRINT "'v' puts you into my
perspace"
1060 INPUT "press 'enter' to sta
rt";z$
1100 RETURN
```

MASTERMIND

Can you crack the hidden code? If you can you'll be really worthy of the title of C&VG mastermind!

The program plays the part of the code-maker in the popular game of Mastermind. One of its strongest features is the use of graphics, both in the initial display and in the depiction of the Mastermind board.

The idea behind the 'game' for those unfamiliar with it, is that a code is set-up, which has to be discovered in as few attempts as possible. The difficulty factor may be altered in two ways.

Firstly the number letters in use may be varied. Secondly the number of positions in the code may be var-

led. In this game the first option is the one used to provide different levels of play.

On RUNning the program there is an initial graphic time frame (10-90, 2390-2410). Then there is a brief set of instructions (100-160).

Then the level of play can be entered by the user typing 1,2 or 3.

```
10          REM GRAPHIC DISPLAY *
20  CLS
30  FORX=1TO180:Z=RND(1023):PRINT@Z,"*";NEXT:
40  FORX=0TO127:Y=81SET(X,Y):Y=47:SET(X,Y):NEXT:
50  FORY=0TO47:X=81SET(X,Y):X=127:SET(X,Y):NEXT:
70  FORZ=1TO266:READ:READY:SET(X,Y):NEXT:
75  PRINT@994,"MASTER MIND   by Daniel Bishop. Copyright, 1982.":
90  FORX=1TO15:SET:NEXT:Y
90  CLS
100         REM INSTRUCTIONS *
110 PRINT"Master Mind - a game of logic....";
120 PRINT"  The computer sets up randomly a four letter code. The object of the ga
me is to deduce by trial and errors the letters and theirpositions in the fewes
t possible ways. You have to deduce this by trial  with A=B or 1=D letters.
II : A=B=C=D=E=F=G=H                                              Level
II : A=B=C=D=E=F=G=H                                    Level III : A=B=C=D=E=
F=G=H=I=J"
140 PRINT"Your score is shown thus:";CHR$(143)"correct letter, correct positio
n.":
145 PRINT"                         ";CHR$(137)"correct letter, wrons colour.
*
160 PRINT"Note: the positions of the scoring pegs bear no relation to the positi
ons of the letters in the code. You reason during the game how to solve R."
175         REM SETUP CODE *
180 DEFSTRA-Z
190 PRINT:PRINT"Do you wish to play at Level I (1), Level II (2), Level III (3)?
"
```

```
200 L$=INKEY$:IF L$<>"1" AND L$<>"2" AND L$<>"3" THEN 200
210 IF L$="1" THEN L = 6
215 IF L$="2" THEN L = 8
216 IF L$="3" THEN L =10
240 FOR Z=1 TO 4
245 R=RND(L):IFR=1THEN(Z)="A"
260 IFR=2THENK(Z)="B"
270 IFR=3THENK(Z)="C"
280 IFR=4THENK(Z)="D"
290 IFR=5THENK(Z)="E"
300 IFR=6THENK(Z)="F"
310 IFR=7THENK(Z)="G"
320 IFR=8THENK(Z)="H"
330 IFR=9THENK(Z)="I"
340 IFR=10THENK(Z)="J"
360 NEXTZ
370 CLS
380 FOR X=4TO39
390 SET(X,1):SET(X,9):SET(X,46):SET(X,34
):SET(X,9)
```


BY DANIEL BISHOP
RUNS ON A TRS80 MODELS I AND III
IN 16K

```
650  FOR X=18TO 123:SET(X,9):NEXTX
660  PRINT@9*4,"G=9;
680  Q$=INKEY$:IFQ$=""THEN 680
690  IFL=10THEN:L$="III"
700  PRINT@17,"Level "+L$&)
710  G=0
720         REM GO LOOP *
730  G=G+1
740  PRINT@20A,"Please turn in your four letters.";
750  PRINT@7,G;
760  PRINT@14;"  ";
770  FOR Z=1 TO 4
790  IF T$="N" THEN 880 else do you wish to resign (Y/N)?"ELSE 820
798  IF T$="N" THEN PRINT@14;"
799  IF Z$=INKEY$:IF Z$="N" AND Z$<>"N"THEN 880
79  IF Z$="Y" THEN 1980 ELSE PRINT@19;"
410 FOR X=1 TO 46
420 SET(X,21):SET(X,33):SET(X,4)
430 NEXTX
460 FOR Y=1 TO 46
470 SET(0,Y):SET(39,Y)
462 NEXTY
470 FOR Y=1 TO 8: SET(21,Y):NEXTY
480 FOR Y=0 TO 41 STEP 3
490 Y=Y+1:SET(21,Y):Y=Y+1:SET(21,Y):Y=Y+1:SET(21,Y)
500 NEXTY
510 SET(21,45)
520 PRINT@40,"MASTER":PRINT@132,"MIND"
530 FOR X=110TO194:PRINTX+CHR$(143):NEXTX
540 PRINT@47;CHR$(175);
```

```
V=260
560 FOR X=1 TO 44
580 FOR X=1 TO 6 STEP 2
590 V=V+10!"0";
595 PRINT@N+V;"D";
610 NEXT X
620 V=V+120!W=W+120.
630 NEXT X
```

```
828 IF L=6 THEN 860
830 IF L=8 THEN 850
890 IFT$<>"A"ANDT$<>"B"ANDT$<>"C"ANDT$<>"D"ANDT$<>"E"ANDT$<>"F"ANDT$<>"G"ANDT$<
>"H"ANDT$<>"I"THEN 708 ELSE 878
850 IFT$<>"A"ANDT$<>"B"ANDT$<>"C"ANDT$<>"D"ANDT$<>"E"ANDT$<>"F"ANDT$<>"G"ANDT$<
>"H"THEN 708 ELSE 878
860 IFT$<>"A"ANDT$<>"B"ANDT$<>"C"ANDT$<>"D"ANDT$<>"E"ANDT$<>"F"THEN 708
868 IFT$<>"A"ANDT$<>"B"ANDT$<>"C"ANDT$<>"D"ANDT$<>"E"ANDT$<>"F"THEN 708
```

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```
880 IFG=1ANDZ=1THENPRINT@908;T$
890 IFG=1ANDZ=2THENPRINT@910;T$
900 IFG=1ANDZ=3THENPRINT@912;T$
910 IFG=1ANDZ=4THENPRINT@914;T$
920 IFG=2ANDZ=1THENPRINT@780;T$
930 IFG=2ANDZ=2THENPRINT@782;T$
940 IFG=2ANDZ=3THENPRINT@784;T$
950 IFG=2ANDZ=4THENPRINT@786;T$
960 IFG=3ANDZ=1THENPRINT@652;T$
970 IFG=3ANDZ=2THENPRINT@654;T$
980 IFG=3ANDZ=3THENPRINT@656;T$
990 IFG=3ANDZ=4THENPRINT@658;T$
1000 IFG=4ANDZ=1THENPRINT@524;T$
1010 IFG=4ANDZ=2THENPRINT@526;T$
1020 IFG=4ANDZ=3THENPRINT@528;T$
1030 IFG=5ANDZ=1THENPRINT@530;T$
1040 IFG=5ANDZ=2THENPRINT@396;T$
1050 IFG=5ANDZ=3THENPRINT@398;T$
1060 IFG=5ANDZ=4THENPRINT@400;T$
1070 IFG=6ANDZ=1THENPRINT@402;T$
1080 IFG=6ANDZ=2THENPRINT@268;T$
1090 IFG=6ANDZ=3THENPRINT@270;T$
1100 IFG=6ANDZ=4THENPRINT@272;T$
1110 IFG=6ANDZ=4THENPRINT@274;T$
1120 NEXT Z
1130 PRINT@14;"Do you wish to change them (Y/N)?"
1140 Z$=INKEY$:IFZ$=""OR(Z$<>"Y"ANDZ$<>"N"THEN 1140
1150 IFZ$="Y"THEN 768
1160 REM* FIND SCORE *
1170 FOR Z=1 TO 4
1180 IF K(Z)="A"THENAK=AK+1
1190 IF K(Z)="B"THENBK=BK+1
1200 IFK(Z)="C"THENCK=CK+1
1210 IFK(Z)="D"THENDK=DK+1
1220 IFK(Z)="E"THENEK=EK+1
1230 IFK(Z)="F"THENFK=FK+1
1240 IFK(Z)="G"THENGK=GK+1
1250 IFK(Z)="H"THENHK=HK+1
1260 IFK(Z)="I"THENIK=IK+1
1270 IFK(Z)="J"THENJK=JK+1
1280 IFT(Z)="A"THENAT=AT+1
1290 IFT(Z)="B"THENBT=BT+1
1300 IFT(Z)="C"THENCT=CT+1
1310 IFT(Z)="D"THENDT=DT+1
1320 IFT(Z)="E"THENET=ET+1
1330 IFT(Z)="F"THENFT=FT+1
1340 IFT(Z)="G"THENGT=GT+1
1350 IFT(Z)="H"THENHT=HT+1
1360 IFT(Z)="I"THENIT=IT+1
1370 IFT(Z)="J"THENJT=JT+1
1380 NEXTZ
1390 FORZ=1TO4
1400 IF K(Z)="A"THENAK=AK-1:AT=AT-1:CC=CC+1
1410 IF K(Z)="B"THENBK=BK-1:BT=BT-1:CC=CC+1
1420 IF K(Z)="C"THENCK=CK-1:CT=CT-1:CC=CC+1
1430 IF K(Z)="D"THENDK=DK-1:DT=DT-1:CC=CC+1
1440 IF K(Z)="E"THENEK=EK-1:ET=ET-1:CC=CC+1
1450 IF K(Z)="F"THENFK=FK-1:FT=FT-1:CC=CC+1
1460 IF K(Z)="G"THENGK=GK-1:GT=GT-1:CC=CC+1
1470 IF K(Z)="H"THENHK=HK-1:HT=HT-1:CC=CC+1
1480 IF K(Z)="I"THENIK=IK-1:IT=IT-1:CC=CC+1
1490 IF K(Z)="J"THENJK=JK-1:JT=JT-1:CC=CC+1
1500 NEXT Z
1520 IFAK>0ANDAT>0THEN 1530 ELSE 1540
1530 IFAK<=ATTHENCW=CW+AKELSECW=CW+AT
1540 IFBK>0ANDBT>0THEN 1550 ELSE 1560
1550 IFBK<=BTTHENCW=CW+BKELSECW=CW+BT
1560 IFCK>0ANDCT>0THEN 1570 ELSE 1580
1570 IFCK<=CTTHENCW=CW+CKELSECW=CW+CT
1580 IFDK>0ANDDT>0THEN 1590 ELSE 1600
1590 IFDK<=DTTHENCW=CW+DKELSECW=CW+DT
1600 IFEK>0ANDET>0THEN 1610 ELSE 1620
1610 IFEK<=ETTHENCW=CW+EKELSECW=CW+ET
1620 IFFK>0ANDFT>0THEN 1630 ELSE 1640
1630 IFFK<=FTTHENCW=CW+FKELSECW=CW+FT
1640 IFGK>0ANDGT>0THEN 1650 ELSE 1660
1650 IFGK<=GTTHENCW=CW+GKELSECW=CW+GT
1660 IFHK>0ANDHT>0THEN 1670 ELSE 1680
1670 IFHK<=HTTHENCW=CW+HKELSECW=CW+HT
1680 IFIK>0ANDIT>0THEN 1690 ELSE 1700
1690 IFIK<=ITTHENCW=CW+IKELSECW=CW+IT
1700 IFJK>0ANDJT>0THEN 1710 ELSE 1720
1710 IFJK<=JTTHENCW=CW+JKELSECW=CW+JT
1720 REM* PRESENT SCORE *
1730 IF G=8 AND CW=8 AND G<=6 THEN GOSUB 1958 :GOTO 2190
1740 IF CC=0 AND G=4 THEN 2190
1750 IF G=1 THEN S(1)=0991S(2)=991:S(3)=983:S(4)=985
1760 IF G=2 THEN S(1)=771:S(2)=773:S(3)=775:S(4)=777
1770 IF G=3 THEN S(1)=643:S(2)=453:S(3)=647:S(4)=649
1780 IF G=4 THEN S(1)=515:S(2)=517:S(3)=519:S(4)=521
1790 IF G=5 THEN S(1)=387:S(2)=389:S(3)=391:S(4)=393
1800 IF G=6 THEN S(1)=259:S(2)=261:S(3)=263:S(4)=265
1810 W=CC
```

```
1820 IF CC=0 THEN 1070
1030 IF CC=0 THEN 1070
1840 PRINT@S(Z);CHR$(143);:CC=CC-1
1850 IF CC=0 THEN 1070
1060 NEXTZ
1070 IF CW=0 THEN 1920
1080 FOR Z=4 TO 1 STEP -1
1090 PRINT@S(Z);CHR$(137);:CW=CW-1
1900 IF CW<=0 THEN 1920
1910 NEXT Z
1920 IF W=4 THEN 2030
1930 IF G=6 THEN 2190
1940 GOSUB 1958 : GOTO 1970
1950 W8=C1CC=81CW=81AT=81DT=81ET=81
FT=81C1=01HT=81IT=81JT=01AK=81BK=01
K=81CK=81EK=81FK=81HK=81IK=81JK=8
1960 RETURN
1970 GOTO 720
1980                    REM* RESIGNING *
1990 PRINT@286;"You have resigned.                ";
2000 PRINT@414;"                ";
2010 GOTO 2240
2020                    REM* WINNING *
2030 PRINT@286;"You have won! Congratulations.    ";
2040 X=414
```

```
2050 IFG=1THENPRINT@Z;"That's incredible. The odds of   ";
2060 IF L=6 THEN O=1296
2070 IF L=8 THEN O=4096
2080 IF L=10 THENO=10000
2090 IF G=1THENPRINT@Z;4+"getting that correct were    ";
2100 IF G=1THENPRINT@Z;O/27+"01" to one. Go and see an ESP  ";
2110 IF G=1THENPRINT@Z;"specialist.                     ";
2120 IF G=2THENPRINT@Z;"Wow! That's really amazing.      ";
2130 IF G=3THENPRINT@Z;"You should go professional.      ";
2140 IF G=4THENPRINT@Z;"You're very good.                ";
2150 IF G=5THENPRINT@Z;"You're good.                     ";
2160 IF G=6THENPRINT@Z;"Phew! By the skin of your teeth. ";
2170 IFG=1THENPRINT@120;"                ";
2180 GOTO 2240
2190                    REM* LOSING *
2200 PRINT@286;"You have lost! Maybe better luck ";
2210 PRINT@358;"next time.                       ";
2220 PRINT@414;"                ";
2230                    REM* GAME OVER *
2240 FOR X=60 TO 771SET(X,6):NEXT X
2250 PRINT@974;"Game over!";
2260 FOR X=139 TO 146IFINT(X<128)THENX=X+128:)INEXTX
2270 PRINT@147;CHR$(170):)
2280 PRINT@148;K(1):PRINT@142;K(2):)PRINT@144;K(3):)PRINT@146;K(4):)
2290 FOR X=0 TO 2000:NEXTZ
```

```
2300 PRINT@926;"Do you wish to play again (Y/N)?";
2310 Z$=INKEY$:IFZ$=""OR(Z$<>"Y"ANDZ$<>"N")THEN 2310
2320 IF Z$="N"THENCLS:END
2330 G=0::GOSUB 1958 : CLS:GOTO 198
```

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```
2348        REM* DATA FOR GRAPHICS DISPLAY *
2350 DATA4,21,5,21,6,20,6,21,4,22,6,23,4,24,6,25,4,26,5,27,4,27,3,28,2,28,1,28,0
,28,2,24,7,23,8,23,9,21,10,18,11,19,11,19,11,28,13,18,14,18,15,18,16,18,16v19v16v2014
,21v15v23v14v23v14v24v13v25v12v26v11v27v18v19v18v39v18v28v37v21v17v22v16v23v16v24v1
,15v22v13v41v23v14v24v13v25v12v26v11v26v12v28v15v29v14v30v13v30v23v24v24v23v24v23v6
5,25
2360 DATA15,16,13,16,12,16,11,16,10,17,9,18,9,19,8,20,8,21,7,22,6,23,21v21v24v21v32v42v
41v25v21v26v28v28v19v18v18v18v28v32v28v19v38v18v32v41v14v16v16v16v26v18v19v17v17v48v18
9,34v19v14v18v35v28v36v19v27v19v38v18v39v17v48v18v17v46v17v47v18v16v48v17v
39v19
2370 DATA43,17,44,16v45,15v46v14v16,13v17v48v15v49v15v49v15v
,49v16v58v14v51v15v52v15v58v15v54v14v55v13v54v15v57v14v58v13v59v12v59v13v59v14v
9v17v58v17v51v17v52v17v53v17v54v17v55v17v56v17v63v11v67v11v68v11v69v11v68v11v
58v58
2380 DATA16,48v1,49v1,2,48v12,62v12,63v12v64v11v65v11v66v68v61v21v61v22v61v24v81v42
v19,48v12,49v12,58v12,51v12,52v13,59v22v66v31v61v23v61v31v26v28v29v61v26v69v23v69
5v61v26v68v27v59v28v58v29v56v29v57v28v68v27
2390 DATA31,62v24,63v27,66v28,73v28,73v21,67v28,68v28v69v38v71v48v18v18v48v12v69v
v24v48v25v67v26v67v27v46v28v78v28v73v27v72v28v73v27v72v28v89v21v98v21v98v22
82v22
2400 DATA2,23,82,24,82,25,83v25,84v25,85v28v86v23v88v21v98v22v97v22v98v21v98v21
,89v23v98v24v91v21v92v28v93v28v94v95v95v28v94v21v96v22v71v22v163v21v19v
88v26v181v28v192v19v183v18v184v18v185v18v186v18v187v18v18v18v18v18v18v
21
2410 DATA16v20,186v19v187v19v188v17v109v16v189v15v110v14v108v19v18v17v11v14v
111v19v113v18v18v13v118v16v17v117v117v16v118v18v119v17v128v16v125v16v
16v18v16v18v19v
```


REACTION
BY J. STANTON & J. WILKINSON
RUNS ON AN UNEXPANDED VIC-20

Want to hone your reactions for those games of Defender, Frogger, Pengo – and of course, Pengo – down at your local arcade? Well here's the game that will test your mind to eye powers to the full.

The rules are simple. All you have to do is wait for a dot to appear on the screen, a noise from your computer and the screen colour to change. As soon as this happens you must the space bar.

Your reaction time is flashed up, and there is also a high score feature which you set with your first attempt.

Further attempts receive compliments from your computer and a suitable jingle. Instructions are included in the program which uses the Vic's sound, visual, and colour facilities to the full and should provide a good test to sort for any arcade fan willing to take a break from blasting multi-coloured aliens!

```
1 V=25:POKE36878,6:PRINTCHR$(14):POKE36879,27
2 GOTO5000
3 O=0
4 GOTO4000
5 PRINT"⬛"
6 R=INT(RND(TI)*800)
7 G=INT(RND(TI)*400)+100
8 PRINT"◼HERE  T  OMES◼...":FORA=1TO1300:NEXTA:POKE36879,250
9 FORL=1TO400:IFPEEK(197)=32THENGOTO6000:NEXTL:PRINT"⬛"
20 POKE7680+G,160
22 POKE36876,200
30 POKE38400+G,0
32 FORA=1TO50:NEXTA:POKE36876,0
35 F=TI
40 PRINT"⬛"
50 IFPEEK(197)=32THENGOTO105
60 GOTO50
105 PRINT"◼◼◼◼◼◼◼EACTION TIME:"
106 X=(TI-F)/◼◼◼◼";X;"  ◼EC."
110 PRINT"◼◼◼◼◼";X;"  ◼EC."
120 IFO=1ANDX<VTHENGOSUB1000
126 IFO=1ANDX>VTHENGOSUB2000
126 IFX<VTHENX=X
130 PRINT"◼◼◼◼◼◼ASTEST TIME:"
135 PRINT"◼◼◼◼◼V;"  ◼EC."
140 FORI=1TO2000:POKE36879,27:NEXTI
```

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REACTION

```
150 X=0:0=1:GOTO5
1000 POKE36876,225
1005 PRINT"N DELL"
1006 FORA=1TO100:NEXTA
1010 POKE36876,210
1015 FORA=1TO75:NEXTA
1016 FORA=1TO75:0
1020 POKE36876,0
1022 PRINT" ONE"
1025 FORA=1TO100:NEXTA
1030 POKE36876,215
1033 PRINT" Y"
1035 FORA=1TO100:NEXTA
1040 POKE36876,210
1043 PRINT" LD";
```

```
1045 FORA=1TO200:NEXTA
1050 POKE36876,220
1053 PRINT" ON,",
1055 FORA=1TO125:NEXTA
1056 POKE36876,0
1060 POKE36876,222
1063 PRINT" DELL
1065 FORA=1TO200:NEXTA
1073 PRINT" ONE!"
1120 POKE36876,0
1130 RETURN
2000 POKE36875,128
2005 PRINT"XS    IARD";
2010 FORA=1TO400:NEXTA
2020 POKE36875,0
2100 POKE36874,128
```

REACTION

```
2105 PRINT"N LUCK"
2110 FORA=1TO400:NEXTA
2111 PRINT"N HUM"
2115 POKE36875,128
2116 FORA=1TO400:NEXTA
2220 POKE36875,0:POKE36874,0:RETURN
4000 POKE36879,249:PRINT">>>>N-EACTION!"
4010 PRINT">>>>
4020 PRINT"XN A -IRCLE OILL APPEAR"
4030 PRINT"N EN IHE SCREEN AND A"
4040 PRINT"N /OISE OILL SOUND..."
4050 PRINT"XN DU UST IIT IHE "
4060 PRINT"N SPACE SIARS",
4070 PRINT" AS -AST "
4080 PRINT"N AS DU AN.... "
4200 PRINT">>>>>N OOD LUCK!"
4500 FORR=1TO7000:NEXTR
4600 GOTO5
5000 PRINT">>>>>>>>>>NNSTRUCTIONS?"
5100 PRINT"N          KY/N)"
5200 GETA$
5300 IFA$="Y"THENGOTO4
5310 IFA$="N"THEN5
5350 GOTO5200
6000 PRINT">>>>NOU CHEATED!!XN    TRY AGAIN"
6050 FORA=1TO2000:NEXTA:PRINT"J"
6100 GOTO5
```

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PYRAMID OF SECRETS

BY STEVE HOLLOWAY

RUNS ON A TRS-80 IN 16K

The builders of those ancient pyramids were crafty people. They used every devious means available to them to protect the treasures of the Pharoah buried deep with the vaults of their awesome creation.

Trap doors, dead ends, false passageways — these ancient architects employed all the tricks of their trade to make sure no-one could rob the tombs lined with gold and glittering jewels.

Will you dare to enter the pyramid of secrets and search for the treasures which are hidden there? If you manage to escape once you have found the glittering prize? Or will you gradually starve to death — trapped within the stone corridors of this ancient maze . . .

This is a game for one player. You will be presented with a 3D representation of a maze in which you must move around in.

There are six levels to explore in search of the treasure. But beware of trap doors — and walls that may look solid, but which may slide open if you move forward into them. The trap doors will drop you back to a lower level — and the entrance to the pyramid is one of those moving blocks of stone and may be difficult to find again. There is also a time limit on the game — after it has run out you are presumed dead.

Program notes:
10-80: Input routine and timer advance
100-200: Help routine: gives player's direction, level, treasure and indicates if a moveable wall is nearby
500-550: Solid wall message and open wall routine.
1020-1050: Move player forward.
3000-3020: Routine for finding walls present and whether stairs, trapdoor, treasure.

```
5 GOTO 6000
10 GOSUB3030:PRINT@0,"WHICH WAY? (F,L,R,H) :-";:PRINT@48,"TIME LEFT -";
20 I$=INKEY$:PRINT@25,I$;:T=T+1:IFT)10000THENCLS:PRINT@520,"SORRY - BUT YOU RAN
OUT OF TIME AND STARVED TO DEATH.":END
30 IFI$="F"GOTO500
40 IFI$="L"THEND-1:IFD(1THEND=4:1GOTO10ELSE10
50 IFI$="R"THEND+1:IFD)4THEND=1:GOTO10ELSE10
60 IFI$="H"THENGOSUB100:GOTO10
70 PRINT@59,100-INT(T/100):GOTO20
100 REM HELP ROUTINE
110 CLS:PRINTTAB(10)"YOU ARE ON LEVEL -";LV:PRINTTAB(10)"(THE EXIT IS ON LEVEL 3
)":PRINT"YOU HAVE ";SC;" POUNDS OF TREASURE"
120 PRINTTAB(10)"YOU ARE FACING ";:OND GOTO130,140,150,160
130 PRINT"NORTH":GOTO170
140 PRINT"EAST":GOTO170
150 PRINT"SOUTH":GOTO170
160 PRINT"WEST":GOTO170
170 PRINT"THE EXIT IS ON THE EAST SIDE OF THE PYRAMID)"
180 IF A(X,Y,LV)=51)PRINT"THERE IS A MOVEABLE WALL NEXT TO YOUR PRESENT POSITION
"
190 PRINT:PRINT:PRINT"PRESS ANY KEY TO CONTINUE PLAY (NOTE TIME IS SLIPPING BY)"
200 PRINT@48,"TIME LEFT -";100-INT(T/100);:T=T+5:I$=INKEY$:IFI$=""THEN 200 ELSE
RETURN
500 X=X+B:Y=Y:GOSUB3000:IFW=0THEN1020
510 IFW=0 OR W=0THENPRINT@530,"THIS IS A SOLID WALL !!!";:FORI=1TO1000:NEXT:PRI
NT@530,"                  ";:GOTO1020
520 PRINT@530,"THE WALL OPENS -";:FORI=179TO16OSTEP-1:PRINT@I,VO;:FORJ=1TO50:NE
XT:NEXT
530 CLS:PRINT@530,"AND CLOSES BEHIND YOU....";:FORI=1TO1000:NEXT
1020 IFD=1THENY=Y-1:GOTO10
1030 IFD=2THENX=X+1:GOTO10
1040 IFD=3THENY=Y+1:GOTO10
1050 X=X-1:GOTO10
1060 IFD=1THENB=B-1:RETURN
1070 IFD=2THENA=A+1:RETURN
1080 IFD=3THENA=A-1:RETURN
```

```
1090 A=A-1:RETURN
3000 NW=A(A,B,LV)AND2:WW=A(A,B,LV)AND1:EW=A(A,B,LV)AND4:SW=A(A,B,LV)AND8:FW=NW+R
  W=WW:ILW=WW:EW=SW:ST=A(A,B,LV)AND96:TR=A(A,B,LV)AND16:PI=A(A,B,LV)AND128:IFD=1THE
  N3020
3010 FORI=1TOD-1:Z=FW:FW=RW:RW=BW:BW=LW:LW=Z:NEXTI
3020 F=A(X,Y,LV)AND(FW*512):RETURN
3030 IFA(X,Y,LV)=769THEN5500ELSEA=X:B=Y:GOSUB3000:IFPI()0ANDRND(9)=4THENGOSUB5600
  :GOTO10
3040 IFST=64THENCLS:LV=LV-1:PRINT@520,"GOING UP STAIRS":GOSUB7050:GOTO1020ELSEIF
  ST=32THENCLS:LV=LV+1:PRINT@520,"GOING DOWNSTAIRS":GOSUB7050:GOTO1020
3050 IFTR()0THENSC=SC+RND(10)*10:CLS:PRINT@520,"YOU HAVE COLLECTED SOME MORE RARE TREA
  SURES.
  YOU NOW HAVE":SC;" POUNDS":A(X,Y,LV)=16:GOSUB7050:GOTO10
3060 CLS:PRINT@141,V0$:PRINT@179,V0$:IFLW()0PRINT@74,XB$;ELSEPRI
  NT@129,W3$;:PRINT@897,W4$
3070 IFNW()0PRINT@116,XB$;:PRINT@1012,XA$;ELSEPRINT@180,W3$;:PRINT@948,W4$
3080 IFFW()0PRINT@142,W1$;:PRINT@910,W2$
3090 GOSUB1060:GOSUB3000
3100 IFST=32THENPRINT@540,S1$;:RETURNELSEIFST=64PRINT@540,S2$;:RETURN
3110 IFLW()0PRINT@162,XC$;:PRINT@910,XC$;ELSEPRINT@334,W7$;:PRINT@718,W8$
3120 IFRW()0PRINT@299,XD$;:PRINT@811,XD$;ELSEPRINT@343,W5$;:PRINT@747,W6$
3130 IFTR()0PRINT@861,TR$
3150 PRINT@342,V1$;:PRINT@362,V1$;:IFWW()0THENPRINT@343,W5$;:PRINT@727,W6$;:RETUR
  N
3160 GOSUB1060:GOSUB3000
3170 IFST=32THENPRINT@540,S1$;:RETURNELSEIFST=64PRINT@540,S2$;:RETURN
3180 IFLW()0PRINT@343,W9$;:PRINT@727,W4$;:ELSEPRINT@407,WA$;:PRINT@663,WA$;
3190 IFRW()0PRINT@423,V3$;:PRINT@679,XJ$;:ELSEPRINT@407,WA$;:PRINT@679,WA$;
3200 PRINT@410,V3$;:PRINT@422,V3$;:IFTR()0PRINT@733,TR$;
3210 PRINT@411,W9$;:PRINT@667,W9$;:RETURN
3220 GOSUB1060:GOSUB3000:IFST=32THENPRINT@540,S1$;:RETURNELSEIFST=64PRINT@540,S2$;:R
  ETURN
3230 IFLW()0PRINT@411,CHR$(176):CHR$(26):CHR$(131):PRINT@667,CHR$(176),CHR$(27):
  CHR$(26):ELSEPRINT@75,CHR$(140):CHR$(27):PRINT@603,CHR$(140):CHR$(140):
3240 IFRW()0PRINT@4aa,CHR$(131):CHR$(27):PRINT@612,CHR$(176):CHR$(176):CHR$(26):
  CHR$(131):ELSEPRINT@484,CHR$(140):CHR$(140):PRINT@612,CHR$(140):CHR$(140):
3260 PRINT@477,CHR$(188):CHR$(24):CHR$(26):V$;CHR$(143):1:PRINT@483,CHR$(188):CHR$
  *(24):CHR$(26):V$;CHR$(143):
3270 PRINT@478,STRING$(5,140):PRINT@606,STRING$(5,140):RETURNELSEPRINT@4
  78,CHR$(176):CHR$(26):CHR$(179):CHR$(32):CHR$(179):CHR$(27):CHR$(176):PRINT@606
  ,CHR$(131):PRINT@610,CHR$(131):RETURN
4000 RETURN
5500 CLS:PRINT@520,"YOU ARE OUT !":PRINT:PRINT"              TIME LEFT";32-INT(T/1000)
  :PRINT:PRINT"         TREASURE COLLECTED -";SC;" POUNDS":IF SC)200 PRINT "         TRULY
  EXCELLENT !!":END ELSE PRINT"YOU DID WELL TO ESCAPE.":END
5600 CLS:PRINT"      YOU HAVE STEPPED ON A MOVEABLE TRAPDOOR AND ARE":FORI=1TO16:PRINT
  STEP64:PRINTI,PRINTI,"FALLING,":FORJ=1TO30:NEXTJ:PRINTI,"                       ":NEXTI:LV=LV+1:RETU
  RN
6000 CLEAR 900:DEFINTA-Z:DIMA(11,11,6):CLS:PRINT@282,"T H E ":PRINT@406,"P Y R A
  M I D":PRINT@532,"O F   S E C R E T S"
6010 PRINT@588,"";:FORI=1TOD8:PRINT#-1,CHR$(27):NEXT:PRINT"/";CHR$(92):";":CHR$
  *(26):FORI=1TO8:PRINTCHR$(92):NEXT:PRINT@640,STRING$(64,"-"
6020 PRINT@780,"WRITTEN BY STEVE HOLLOWAY,  FEB  1982":LV=51A(6,5,1)=231A(9,6,3)
  =769
6030 N1=7-LV:N2=12-N1:FORX=N1TON2:FORY=N1TON2:READA:A(X,Y,LV)=A:NEXTY:NEXTX:LV=L
  V-1:IFLV()0THEN6030
6040 W1$=STRING$(27,131):W2$=STRING$(37,176):W3$=STRING$(12,131):W4$=STRING$(12,
  176):XA$=CHR$(131)+CHR$(140)+CHR$(26):XB$=CHR$(26)+CHR$(176)+CHR$(131):PRINT"P
  RESS 'I' FOR INSTRUCTIONS OR ANY OTHER KEY TO CONTINUE"
6050 I$=INKEY$:IFI$=""THEN6050ELSEIFINT$="I"JUST A MOMENT":IF1$="I"GOSUB3000
6060 V$=CHR$(191)+CHR$(26):CHR$(24):FORI=1TOD13:V0$=V0$+V$:NEXT:XC$=CHR$(140)+CH
  R$(176)+CHR$(26):XD$=CHR$(26)+CHR$(176):V3$=CHR$(27)+XB$+CHR$(27):XE$=CHR$(176)+CHR$(1
  40)
6070 XE$=CHR$(140)+CHR$(131)+CHR$(140)+CHR$(27)+XB$+CHR$(27):XJ$=XB$+CHR$(26)+XA$+CHR$(
  26):CHR$(131):CHR$(140):FORI=1TO7:V1$=V1$+V$:NEXT:W7$=STRING$(8,131):W8$=STRIN
  G$(8,176):W5$=STRING$(19,131):W6$=STRING$(19,176)
6080 S1$="STAIRS"+CHR$(26)+STRING$(5,24)+"DOWN":S2$="STAIRS"+CHR$(26)+STRING$(4,
  24)+"UP":TR$="TREASURE"
6090 W9$=STRING$(11,140):WA$=STRING$(3,140):V3$=CHR$(188)+CHR$(26)+CHR$(24)+V$+V
  $+V$+CHR$(143):XG$=CHR$(140)+CHR$(176):CHR$(26):XH$=CHR$(140)+CHR$(131
  )+CHR$(27):CHR$(26):IX$=CHR$(140)+CHR$(140)
```

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```
6100 XJ$=CHR$(176)+CHR$(26)+CHR$(131)+CHR$(140)
6110 FORI=1TO11:FORJ=1TO11:READA(I,J,K)=A$:NEXTJ:NEXTI
6980 PRINTTAB(8)"PRESS (F) TO OPEN ENTRANCE AND START EXPLORING"
6980 D=4:X=9:Y=5:SC=0:T=0
6990 IN=INKEY$:IFI$<>"F"THENCLS:GOTO520ELSE6990
7000 DATA3,10,13,2,9,3,8,3,12,2,12,7,8,10,10,10,2,5,8,3,29,10,6,5,2,14,10,13,2,9,3,8,3,12,2,12
,7,8,10,10,2,5,8,3,29,10,6,5,2,14,10,11,14,1,8,3,1,12,10,10,2,29,14,10,32,10,2063,10,10,6,5,13,6,5,12,519,12,32
7010 DATA19,133,5,5,2053,13,32,32,3,5,9,515,5,12,3,8,7,12,10,64,19,10,6,5,5,4,5,8
,6,1,5,13,7,5,8,11,2062,64,1,13,11,10,6,517,5,4,5,140,14
7020 DATA1,5,133,13,10,6,9,64,32,6,137,2,133,9,2,141,10,6,32,2062,6,12,3,5,32,10,64,9,6,5,140,32
7030 DATA7,9,23,5,5,5,1,1,5,5,9,27,6,9,7,5,9,14,10,11,7,8,10,11,6,5,9,2,5,8,2,29
,10,10,2,1,4109,1034,10,27,10,6,5,8,10,10,3,10,10,3,12,3,5,12,6,10,10,10,7,0,5,9,14,3,9
7040 DATA5,3,8,6,5,12,11,6,5,12,10,10,7,4,5,1,13,6,1,5,5,12,6,5,9,3,12,64,7,4,1,
5,9,3,29,10,2,5,12,3,29,10,64,10,5,7,5,6,5,12,6,12
7050 FORI=1TO1000:NEXTI:CLS:RETURN
8000 CLS:PRINTTAB(10)"P Y R A M I D  OF  S E C R E T S":PRINT:PRINT"YOU ARE O
UTSIDE THE ENTRANCE OF THE PYRAMID. IN A MOMENT YOU
CAN ENTER AND FIND YOUR WAY AROUND."
8010 PRINT"THERE ARE TEN TREASURES TO FIND AND MINOR HAZARDS TO AVOID
THERE ARE SOME TRAPS IN THE FLOOR WHICH WILL DROP YOU TO THE   LEVEL BELOW SOME
TIMES AND THERE ARE WALLS WHICH LOOK SOLID BUT"
8020 PRINT"WHICH WILL ALLOW YOU THROUGH IF YOU MOVE FOREWARD INTO THEM. YOU CONT
ROL YOUR WAY THROUGH THE PYRAMID USING -"
8030 PRINT"THE DIRECTION YOU ARE FACING BUT REDUCE YOUR TIME.
YOUR TIME IS LIMITED SO DON'T TAKE TOO LONG PONDERING !":RETURN
```

SSSNAKES

BY STEVEN JERATH

RUNS ON AN ATARI 400 IN 16K

Are you a slippery customer? Then here's your chance to prove it. The aim of this two player game is to trap your opponent in the coils of your snake while at the same time avoiding getting trapped yourself.

You cannot go back on yourself or touch your own line. You must not touch your opponent's line. Also you have to stay away from the stars which dot the screen — and of course you must stay away from the walls.

```
5 GOSUB 2000
10 GRAPHICS 7+16:V1=0:V2=0:H1=1:H2=-1
11 SETCOLOR 2,7,8
13 FOR AAA=1 TO 20:COLOR 3:PLOT INT(RND(
1)*40),INT(RND(1)*96):NEXT AAA
20 X1=10:Y1=40:X2=149:Y2=80
29 COLOR 3:PLOT 0,0:DRAWTO 159,0:DRAWTO
159,95:DRAWTO 0,95:DRAWTO 0,0
30 B=STICK(0)
31 B=STICK(1)
50 IF A=14 THEN V1=1:H1=0
51 IF A=13 THEN V1=-1:H1=0
52 IF A=11 THEN V1=0:H1=-1
53 IF A=7 THEN V1=0:H1=1
61 IF B=14 THEN V2=-1:H2=0
61 IF B=13 THEN V2=1:H2=0
62 IF B=11 THEN V2=0:H2=-1
63 IF B=7 THEN V2=0:H2=1
70 X1=X1+H1:Y1=Y1+V1
71 X2=X2+H2:Y2=Y2+V2
80 IF X1=X2 AND Y1=Y2 THEN 300
81 IF X1=X2 AND Y1=Y2 THEN 300
85 LOCATE X1,Y1,ZZ:IF ZZ<>0 THEN 100
86 LOCATE X2,Y2,ZZ:IF ZZ<>0 THEN 200
90 COLOR 1:PLOT X1,Y1
91 COLOR 2:PLOT X2,Y2
92 PEEK 53279,0
95 GOTO 130
100 GRAPHICS 1+16
101 POKE (PEEK(560)+256*PEEK(561))+3,64+
7:SETCOLOR 2,7,10
```

```
102 ? #6;"                PLAYER 1 LOSES"
103 R2=R2+1:IF R2>9 THEN 500
104 ? #6;? #6;? #6;? #6;"               SCORES"
105 ? #6;"           player  1-"R1:? #6;
player  2-"R2
150 FOR S=0 TO 250:SOUND 0,S,10,10:NEXT
S:SOUND 0,0,0,0
190 ? #6;? #6;? #6;"           hit any key "
199 GET #1,K:GOTO 10
200 GRAPHICS 1+16
201 POKE (PEEK(560)+256*PEEK(561))+3,64+
7:SETCOLOR 2,7,10
202 ? #6;"                PLAYER 2 LOSES"
203 R1=R1+1:IF R1>9 THEN 600
204 ? #6;? #6;? #6;? #6;"               SCORES"
205 ? #6;"           player  1-"R1:? #6;
player  2-"R2
250 FOR S=0 TO 250:SOUND 0,S,10,10:NEXT
S:SOUND 0,0,0,0
290 ? #6;? #6;? #6;"           hit any key "
299 GET #1,K:GOTO 10
300 GRAPHICS 1+16
301 POKE (PEEK(560)+256*PEEK(561))+3,64+
7:SETCOLOR 2,7,10
302 ? #6;"          you both lost!!!!"
303 ? #6;? #6;? #6;"            unlucky!!!!"
304 FOR S=0 TO 10:FOR W=0 TO 10:SOUND 0,
S*10,10,10:SOUND 0,0,0,0:NEXT W:NEXT S
310 GOTO 190
500 GRAPHICS 1+16
501 POKE (PEEK(560)+256*PEEK(561))+3,64+
```

12

```
7:SETCOLOR 2,7,10
502 ? #6;"      PLAYER NO. 2 WINGS"
503 FOR ZZ=0 TO 100:FOR W=0 TO 20:NEXT
W:SOUND 0,ZZZ,10,4:NEXT ZZZ
504 SOUND 0,0,0,0
510 GOTO 610
600 GRAPHICS 1+16
601 POKE (PEEK(560)+256*PEEK(561))+3,64+
7:SETCOLOR 2,7,10
602 ? #6;"      PLAYER NO. 1 WINGS"
603 FOR ZZ=0 TO 100:FOR W=0 TO 20:NEXT
W:SOUND 0,ZZZ,10,4:NEXT ZZZ
604 SOUND 0,0,0,0
610 ? #6;? #6;? #6;" #6"
620 ? #6;" hit any key for"
630 ? #6;"    another game"
640 GET #1,K:RUN
1000 FOR W=0 TO 500:NEXT W
```

```
1001 RETURN
2000 OPEN 1,4,0,"K"
2001 GRAPHICS 1+16
2002 POKE (PEEK(560)+256*PEEK(561))+3,64
+7
2003 ? #6;"      snakes"
2004 SETCOLOR 2,0,14
2010 ? #6;? #6
2020 ? #6;"   IN THIS 2 PLAYER"
2021 ? #6;"  GAME EACH PLAYER"
2022 ? #6;"  TRIES TO AVOID THE"
2023 ? #6;"     OTHERS TRAIL"
2024 ? #6;" USING THE JOYSTICK"
2025 ? #6;? #6;"hit any key to begi
n"
2026 GET #1,K
2030 RETURN
9999 GOTO 9999
```

RED ALERT
BY SIMON PARKER

RUNS ON A VIC-20

IN 16K

Got tunnel vision? Then this game is the one for you! Zapping through narrow tunnels is a task some arcade video freaks just love. And here's a program that will save a few of those precious 10p's.

It's based on arcade game Scramble – the game that you either love or hate. For those of you who have yet to come across the game – and you must be few and far between – here's a rundown on what you have to do. The idea is to pilot a spacecraft over the ever changing landscape of an alien cavern, dotted with fuel dumps. You must avoid the walls of the cavern and the spaceships which advance against you.

You bomb the fuel dumps and shot down the ships – it's as simple as that!

The program is written mainly in basic apart from a small machine code routine in subroutine 5000. This is used to pull the screen from right to left. The game can be controlled using either the keyboard or a joystick.

```
0 REM**RED ALERT**
1 REM**BY SIMON PARKER**
2 REM**27/6/1982
5 P=7904
6 J=5:G=5:CC=5:DD=9
7 TI$="000000"
8 GOSUB1000:GOSUB5000
10 PRINT"◼"
20 POKE36879,143:POKE36878,15
30 B=RND(1)
31 IFTI$="000020"THENPOKE36879,8:CC=.65:DD=.8
32 IFTI$="000030"THENPOKE36879,57:CC =.75:DD=.7
35 C=RND(1)
36 IFCC<CCTHENJ=J+1:GOTO40
37 J=J-1
40 IFCC<CCTHENG=G+1:GOTO046
45 G=G-1
46 IFJ>10ANDG<10THENG=G-1:J=J-1
47 IFJ>G>17THENJ=J-1:G=G-1
48 IFJ<1THENJ=1
49 IFG<1THENG=1
50 FORK=1TOJ
60 POKE8185-22*K,20
61 NEXTK:IFK<.20R0>.8THENPOKE8185-22*K,22:POKE81
85+30220-22*K
62 FORK=1TOG
65 POKE7701+22*K,20
66 NEXTK:IFG<.20R0>.8THENPOKE7701+22*K+44,24:POKE38421+22*K+44,2
91 POKEP,32
95 POKE36.21:POKEP-1,32
100 PRINT"◼◼SCORE◼"SC
125 POKEP,32
130 L2=PEEK(197):P2=PEEK(653)
135 LZ=PEEK(197):P2=PEEK(653)
140 L=PEEK(37132):IFL=127:P1=PEEK(37152):POKE37154,255
143 IFL=30#NDP1=13THENP2=P1
145 IFL=30RP2=1THENSC=SC-50:GOSUB3000:GOTO181
150 IFL=540RLZ=22THENP=P-1
152 IFL=460RLZ=13THENP=P+1
167 IFL=540RLZ=53THENP=P-22
170 IFL=540RLZ=53THENP=P+22
180 IFP1=1190RLZ=14THENP=P+1
181 IFPEEK(P+1)<>32THENGOTO2000
190 POKE36.21:POKEP-1,52:POKE36877,120+INT((P-7680)/4)
200 GOTO320
1000 POKE52,28:POKE56,28
```

```
1010 FORI=7168TO7679:POKEI,PEEK(I+25600):NEXT
1030 FORC=7328TO7367:READA:POKEC,A:NEXT
1035 POKE36869,255:RETURN
1040 DATA0,85,170,85,170,85,170,85
1050 DATA0,128,192,224,224,255,255,0
1060 DATA0,60,126,126,255,60,66,129
1070 DATA0,80,168,75,168,160,160,0
1080 DATA0,1,3,7,127,255,255,0
2000 FORI=1TO10
2010 POKE36879,I*10
2011 POKE36878,10-I
2012 POKE36877,220
2020 FORK=1TO200:NEXTK
2030 NEXTI
2040 FORL=1TO1000:NEXTL
2045 POKE36869,240:PRINT"J"
2050 PRINT"XXXXGAME OVER"
2060 PRINT"XXYOU SCORE";SC
2070 PRINT"XXANOTHER GAME (Y/N)"
2080 GETA$:IFA$=""THEN2080
2081 IFA$="Y"THENJ=0:G=0:P=7904:SC=0:TI$="000000":POKE36869,255:GOTO10
2082 IFA$="N"THENPRINT"J":POKE36863,240:END
2090 GOTO2080
3000 FORM=1TO10
3005 POKEN,32
3010 N=P+M*22:POKE36876,150+M*10
3020 IFPEEK(N)=22THENSC=SC+250:POKEN,42:POKE36876,0:RETURN
3030 IFPEEK(N)=20THENPOKEN,42:POKE36876,0:RETURN
3040 POKEN,90:NEXTM:POKEN,32:POKE36876,0:RETURN
4000 SC=SC-100:FORB=1TO10:POKEMI,32:M1=P+B:POKE36876,240:POKE36876,0
4010 IFPEEK(M1)=20THENPOKEMI,20:RETURN
4011 IFPEEK(M1)=22THENSC=SC+200:POKEMI,32:RETURN
4012 IFPEEK(M1)=24THENSC=SC+150:POKEMI,32:RETURN
4020 POKEMI,42:NEXTB:RETURN
4030 NEXTB:POKEMI,32:RETURN
5000 FORK=829TO874:READS:POKEK,S:NEXTK:RETURN
5010 DATA169,19,32,210,255,169,29,32,210,255,169,13,32,210,255,169,4,141,60,3
5020 DATA169,32,210,255,169,29,32,210,255,169,13,32,210,255,238,60,3,173,60,
3
5030 DATA201,21,208,231,96
5040 RETURN
```

BY M. LEVIN

RUNS ON AN

ATOM IN 16K

Warning. This game can impair your sanity. Written in machine code for an Atom with at least 3K of RAM this program seems designed to either increase your reasoning power or destroy what little sanity you have left.

You are given a square grid with a random number of these squares illuminated. By pressing any of the numeric keys within the range of 1-9, different combinations of these squares may be obtained.

The final object being to light up all the squares except the centre one. Should you manage this task you are rewarded by a dazzling display of sight and sound, small consolation for shattered nerves.

```
10DIMKKB,WW2
20P.#12"WAIT"#21
30GOS.∆;GOS.♦;GOS.█
40IF#300=#BF00@FBF:
50IF#310=#00FBFBF:IF#304=#000000BF:IF#308=#00
60IF#320=#00BFBF00:IF#314=#0000000BF:IF#318=#00
70IF#330=#BF00@FBF:IF#308=#00BF0000:IF#348=#00
80IF#340=#FBFB00F:IF#308=#00BF00BF:IF#348=#00
90IF#350=#00000000:IF#364=#BF00BF00:IF#358=#BF
100IF#360=#BF000000:IF#364=#FBF000:IF#358=#BF
110IF#370=#00000000:IF#374=#BFBF0000:IF#378=#BF
120IF#380=#00000000:IF#384=#00F00FBF:IF#378=#BF
130IFR.%2=0;?#80A7=#FF:IFR.%2=0;?#80AB=#FF:IFR.%2=0;?#80AF=#FF
140IFR.%2=0;?#8107=#FF:IFR.%2=0;?#810B=#FF:IFR.%2=0;?#810F=#FF
150IFR.%2=0;?#8167=#FF:IFR.%2=0;?#816B=#FF:IFR.%2=0;?#816F=#FF
160!#0E=#8025;P."magic"#128"square"
170MOVE19,9;DRAW9,35;MOVE27,9;DRAW27,35;MOVE10,18;DRAW35,18
180MOVE10,26;DRAW35,26
190 LINK #3300
195 RUN
200 END
210∆ P.#3300
220© KK0 J&R#FFE3 \ GET KEY
230 CMP#31;BMI KK0
240 CMP#40;BPL KK0
250 AND#0F
```

MAGIC SQUARE

➤➤

BREAKOUT!

Ever feel like you're just banging your head up against a brick wall? Do you want to break out? Well, here's your chance. Simply program in this little number and you'll be able to knock down walls as quick as your computer can build them.

It's a game for one player and the object is to knock as many bricks out of the multicoloured wall as you can by bouncing this ball at it. You get three balls to score as many points as you can. Key '5' moves your bat left, key '8' moves it right.

BY DAVID HOUNSLOW

RUNS ON A SPECTRUM IN 16K

```
250 ROL A:ROL A
270 ROL A:ROL A
280 STA#00
290 SEC:SBC#010
300 TAX
310 LDY#09
320 TYA    ; COMPLIMENT
330 EOR#300,X
340 STA#00A7
350 INX
360 LDA#00AB
370 EOR#300,X
380 STA#00A7
390 INX
400 LDA#00AF
410 EOR#300,X
420 STA#00A7
430 INX
440 LDA#010B
450 EOR#300,X
460 STA#0107
470 INX
480 LDA#010B
490 EOR#300,X
500 STA#010B
510 INX
520 LDA#010F
530 EOR#300,X
540 STA#010F
550 INX
560 LDA#0167
570 EOR#300,X
580 STA#0167
590 INX
600 LDA#016B
610 EOR#300,X
620 STA#016B
630 INX
640 LDA#016F
650 EOR#300,X
660 STA#016F
670 BCS KK2
680 KK1 JMP KK0
690 KK2 LD#@000A
    BLEEP
700 KK3 LDX#00
710 KK4 DEX:BNE KK4
730 EOR#4
740 STA#0002
750 DEY
760 BNE KK3
770 STA#00A7
    WIN CHECK
780 CMP#0FF
790 BNE KK1
800 CMP#0FF
810 CMP#0FF
820 BNE KK1
830 LDA#00AF
840 CMP#0FF
850 BNE KK1
860 LDA#0107
870 CMP#0FF
880 CMP#0FF
890 LDA#010B
900 CMP#040
910 BNE KK1
920 CMP#0FF
930 CMP#0FF
940 BNE KK1
950 LDA#0167
960 CMP#0FF
970 BNE KK1
980 LDA#016B
990 CMP#0FF
1000 BNE KK1
1010 LDA#016F
1020 CMP#0FF
1050 LDA#0:STA#40
    BCSKK5
1051 WW0 LDX#090
    BLEEP
1052 WW1 TXA:TAY
1053 LDA#0002
1054 EOR#4
1055 STA#0002
1056 WW2 DEY:BNE WW2
1057 DEX:BNE WW1
1058 RTS
1060 KK5 LDA#00A7
    DISPLAY WIN
1070 EOR#0FF
1080 STA#00A7
1090 JSR WW0
1100 LDA#00AB
1110 EOR#0FF
1120 STA#00AB
1130 JSR WW0
1140 LDA#00AF
1150 EOR#0FF
1160 STA#00AF
1170 JSR WW0
1180 LDA#0107
1190 EOR#0FF
1200 STA#0107
1210 JSR WW0
1220 LDA#010B
1230 EOR#0FF
1240 STA#010B
1250 JSR WW0
1260 LDA#010F
1270 EOR#0FF
1280 STA#010F
1290 JSR WW0
1300 LDA#0167
1310 EOR#0FF
1320 STA#0167
1330 JSR WW0
1340 LDA#016B
1350 EOR#0FF
1360 STA#016B
1370 JSR WW0
1380 DEC#40:BNE KK5
1390 RTS
1480
1490 RETURN
```

```
1 LET hs=0
2 LET hs=0: PAPER 0: BORDER 0: IN
K FLASH 0: BRIGHT 0: CLS :
PRINT AT 10,2; FLASH 1; "Do you
want instructions
6 LET a$=INKEY$ : IF a$= "" THE
N GO TO 6
8 IF a$="y" OR a$="Y" THEN
GO SUB 600
10 LET ballsleft=1: L
ET b$=0: FOR x=0 TO 7: READ row :
POKE USR a$+x=CHR$ row : NEXT x
15 DATA BIN 00011110,BIN 0111
110,255,255,BIN 01111110, BIN 0
110,255,255,BIN 01111110,BIN 0111
110,255,BIN 00111100
30 RESTORE
40 PAPER 0
50 INK 6: LET xmove=1
LET xmove=1
20 BORDER 1
50 REM page 1
54 IF ss=000 THEN CLS : LET b
allsleft=ballsleft: LET ballsle
ft: PRINT AT 10,10: FLASH 1: INK 6:
PRINT "   BEEP .125,20: FOR p=
EXTRA BALL   BEEP .125,20: FOR p=
TO 300: NEXT p: LET ballsleft=p
: LET ballsleft=1
55 LET bn=0: IF s$<1 THEN LET
hs=s$
56 PRINT AT 2,0; PAPER 2; "   p
RINT AT 1,7: PAPER 7: TO 4-LEN (STR$
RE; "; s$; TO 4-LEN (STR$
)); s$; INK 7: "HIGH ";
)); INK 2; TO 4-LEN (STR$ (hs)
))); INK 7; "   : INK 2;
AT 1,31-7; "BALL "; INK 6; balls
left
60 PRINT AT 0,0: FOR x=0 TO 29
70 BEEP .01,x: PAPER 6: "  
E: PRINT AT 3,x: PAPER 6; "  
IF b=3 THEN LET b=0
80 NEXT x: NEXT y: PRINT AT 4
PAPER 7; x: AT 21,30: NEX
Y: PRINT AT 21,0: PAPER 2; "A
T 0,0."
89 PRINT AT 10,0; "   ; AT 18,30
INT AT 17,0; "   ; AT 17,30
90 LET x=15: LET y=15: BEEP .2,0: B
EEP .125,15: BEEP .5,10: NEXT
: BEEP .125,15: LET bx=y: LET b
20(+5) IF bx zzy AND y>0 (AND bx) G
O TO 95
95 PRINT AT 18,x;b$
99 IF INKEY$="8" THEN GO TO 100
100 GO SUB 300
110 IF INKEY$="5" THEN GO TO 100
110 PRINT AT 18,x;b$
110 LET x=x+2*(INKEY$="8") -2*(I
```

```
NKEY$="5"): IF X<0 THEN LET X=0
185 IF X>29 THEN LET X=29
130 GO TO 540
200 PRINT AT by,bx-1:"
310 LET bx+umove: LET ymove=1:
x
318 IF by<x THEN LET ymove=1:
BEEP .1,35
315 IF bx>25 OR bx<X+3,25
move=-xmove: BEEP .01,25
318 IF by>=20 THEN LET ballsier
t,ballsier=1: BEEP .3,-30: BEEP
1: IF NOT ballsier THEN LET um
ove=1
325 PRINT AT 1,25,ballsier
328 IF ballsier=4 THEN GO TO 5
0
330 LET attr=ATTR (by,bx
335 LET attr=attr THEN GO TO 410
338 LET attr=x AND ymove=1
GO TO 410
340 IF (X<=bx OR x+3 OR attr=1
ms AND umove=1) THEN LET x
ove=-1: AND umove=1 THEN LET x=
bx: attr=8 OR attr=54 OR ms=1
350 IF attr=8 THEN PRINT AT
tr=56 THEN LET ymove=3: BEEP .1
370 IF bx+1<ymove THEN PRINT A
ATTR (by,bx+1)
360 IF bx+1>25 THEN PRINT AT ATTR
T by,bx+1: GO TO 370
365 IF a=tT THEN PRINT AT by,bx
-bx-1: attr=1
370 LET bn=bn+1: LET ss=ss+1
380 PRINT AT 1,6,s: GO TO 40
LEN (STR$ (s))): GO TO 40
-LEN (STR$ (s)):3: BEEP .01,35:
IF bn>0 THEN GO TO 40
```

```
360 IF s>hs THEN LET hs=s
T AT 1,19:s?1 TO 4-LEN (STR$ (hs
)))):hs
381 GO TO 400
381 PRINT AT by,bx: INK 6:"O"
410 PRINT AT by,bx: INK 6:"O"
420 RETURN
470 PRINT AT 10,12: FLASH 1: IN
K "GAMEOVER": FOR x=1 TO 100
NEXT x: CLS
s=s
500 PAPER 7: INK 0: CLS
505 BRIGHT 1: INK 8: 12."BREA
610 PRINT CHR$
KOUT": FOR b=1 TO PRINT CHR$
K: NEXT PRINT OVER 1: INK 2
620 BRIGHT 1: ... This is a game f
or 1 player. The object is to kn
ock as many bricks out of the m
ulticoloured wall as you can: Yo
u do this by stopping the ball f
rom going off the bottom of the
screen by hitting it with your
bat. You have 5 balls in whi
ch to score as many points as
you can. ... Key 5 Moves your
bat left. ... Key 8 TAB 4: BR
IGHT 1: (PRESS ANY KEY TO START)
630 PAUSE 0: LET a$=INKEY$: IF
a$="" THEN GO TO 630
640 RETURN
```

AIR ATTACK

BY IAN STRINGER

RUNS ON AN ATARI 400 IN 16K

You are in command of a giant battleship armed with all the latest weapons. And you are under attack.

Jet fighters, helicopters and armoured balloons are out to do your ship damage.

Your task is to use your supply of missiles — 20 in all — to the best advantage. Shoot down as many of the enemy as possible with the limited supply of weaponry. When your armament is used up the computer shows the high score.

```
1 REM   *** AIR ATTACK ***
2 REM      By Ian Stringer
3 REM          1982
4 REM
5 DIM Y(4):Y(0)=91:Y(1)=20:Y(2):Y(3)=
40:Y(4)=88:REM Controls vertical positio
n of 4 players
6 X1=100:X2=130:X3=55:X0=100:Q1=-3:Q2=4
Q3=-2:Q0=2:REM X controls horz. position
 of players. Q controls speed
7 B=75:B1=8:XA=60
10 PMBASE=54279:RAMTOP=106:SDMCTL=559:GR
ACTL=53277:HPOSP0=53248:HPOSP1=53249:HPO
SP2=53250:HPOSP3=53251
20 PCOLR0=704:PCOLR1=705:PCOLR2=706:PCOL
R3=707
30 SIZEP0=53256:SIZEP2=53258:REM Used to
 alter width of players of 5
50 P1PF=53253:P2PF=53254:P3PF=53255:REM
Used to detect collisions between playfi
eld(missile) & players
90 POKE SIZEP0,1:POKE SIZEP2,1:REM Playe
rs 0 & 2 set to double width
99 REM
100 GRAPHICS 7
110 A=PEEK(RAMTOP)-24:POKE PMBASE,A:MYPM
BASE=256*A:POKE SDMCTL,46:POKE GRACTL,3
120 POKE HPOSP0,X0:POKE HPOSP1,X1
POKE HPOSP2,X2:POKE HPOSP3,X3
125 REM
130 FOR I=MYPMBASE+384 TO MYPMBASE+1024:
POKE I,0:NEXT I:REM Clears P-M RAM
```

```
140 FOR I=MYPMBASE+512+Y(0) TO MYPMBASE+
516+Y(0):READ A:POKE I,A:NEXT I
150 FOR I=MYPMBASE+640+Y(1) TO MYPMBASE+
644+Y(1):READ A:POKE I,A:NEXT I
160 FOR I=MYPMBASE+768+Y(2) TO MYPMBASE+
773+Y(2):READ A:POKE I,A:NEXT I
170 FOR I=MYPMBASE+896+Y(3) TO MYPMBASE+
905+Y(3):READ A:POKE I,A:NEXT I
180 REM Lines 140-170 read player data i
nto P-M RAM
190 POKE PCOLR0,88:POKE PCOLR1,26:POKE P
COLR2,138:POKE PCOLR3,186
191 POKE 752,1:SH=20:REM POKE 752,1 remo
ves cursor
192 GOSUB 1500
196 GOSUB 1500
199 REM
200 GOSUB 1000:REM MOVE TARGET
210 IF STRIG(0)=0 THEN ST=1
220 IF ST=1 THEN GOSUB 1200:REM MOVE BULLET
230 GOSUB 1100:REM MOVE SHIP
240 GOSUB 1300:REM CHECK HITS
250 IF SH=0 THEN GOSUB 1410
260 GOTO 200
1000 X1=X1+Q1:POKE HPOSP1,X1:IF X1<35 TH
EN X1=220
1010 X2=X2+Q2:POKE HPOSP2,X2:IF X2>220 T
HEN X2=35
1020 X3=X3+Q3:POKE HPOSP3,X3:IF X3>215 O
R X3<35 THEN Q3=-Q3
1090 RETURN
1100 F=230:IF STICK(0)=11 THEN X0=X0-Q0:
```

16

```
F=170
1110 IF STICK(0)=7 THEN X0=X0+Q0:F=180
1115 IF X0>199 THEN X0=199
1116 IF X0<40 THEN X0=40
1120 POKE HPOSP0,X0:SOUND 3,F,6,10
1130 RETURN
1200 COLOR 0:PLOT XA,B
1210 B=B-2:COLOR 1:PLOT X0-40,B:XA=X0-40
1220 SOUND 8,B,10,14
1250 IF B<2 THEN COLOR 0:PLOT XA,B=75:
ST=0:SH=SH-1
1290 RETURN
1300 IF PEEK(P1PF)<>0 THEN HIT=1:GOTO 13
40
1310 IF PEEK(P2PF)<>0 THEN HIT=2:GOTO 13
40
1320 IF PEEK(P3PF)<>0 THEN HIT=3:GOTO 13
40
1340 IF HIT=0 THEN 1390
1345 FOR S=20 TO -20 STEP -1:SOUND 0,ABS
(S),8,12:NEXT S
1350 IF HIT=1 THEN SC=SC+30:X1=30
1355 IF HIT=2 THEN SC=SC+15:X2=225
1360 IF HIT=3 THEN SC=SC+5:X3=43:Q=1
1385 COLOR 0:PLOT XA,B
1389 SOUND 0,0,0,0:ST=0:B=75:HIT=0:POKE
53278,1:SH=SH-1
1390 POKE 656,1:POKE 657,9:? SC
1395 POKE 656,1:POKE 657,30:? SH:" "
1400 RETURN
1410 OPEN #1,4,0,"K:":SOUND 3,0,0,0
1415 ? ")"
1420 POKE 656,1:POKE 657,2:? "  YOU SCOR
ED "ISC" IN 20 SHOTS.
                              PL
AY AGAIN (Y/N)":GET #1,K
1425 IF K=255 THEN 1420
1430 IF K>89 THEN END
1435 IF SC>HSC THEN HSC=SC
1440 SC=0:SH=20
1480 ? "}"
1485 GOSUB 1500
1488 POKE 656,2:POKE 657,14:? HSC
1489 CLOSE #1
1490 RETURN
1500 POKE 656,1:POKE 657,3:? "SCORE"
1510 POKE 656,1:POKE 657,24:? "SHOTS"
1520 POKE 656,2:POKE 657,3:? "HIGH SCORE
"
1550 RETURN
1600 XX=0:POKE 656,0:POKE 657,10:? "***
AIR ATTACK ***":SOUND 0,255,10,8:SOUND 1
,254,10,8
1610 XX=XX+1:IF XX>30 THEN 1630
1620 POKE 656,2:POKE 657,13:? "Press STA
RT"
1630 IF PEEK(53279)=6 THEN 1690
1640 GOSUB 1600
1649 IF XX<10 THEN 1680
1650 POKE 656,2:POKE 657,19:? " "
1651 IF XX>20 THEN XX=0
1680 GOTO 1610
1690 SOUND 0,0,0,0:SOUND 1,0,0,0:? "}":R
2999 REM
3000 DATA 8,8,30,63,255,253,51,94,120,12
0,128,192,254,255,12,56,60,126,255,255,2
55,189,66,36,60,60
```

WORLD CUP

BY G. R. JOHNSON

RUNS ON A BBC MODEL B IN 32K

Remember the World Cup? Those heady summer days when England still had it all to play for and everyone was saying that this time the lads could pull it off . . .

Well they didn't quite make it did they? And now there's another four years to wait until the next one. Still, you can fill in the time by programming in our version of the World Cup conflict.

By special request we're reprinting one of C&VG's most popular program listings — first published in June last year. But this time we've adapted it so all you BBC owners out there can become soccer supremos.

World Cup Manager sets out to give you all the frustrations of sitting on the bench when the national side you manage go a goal down 20 minutes from time in a crucial match.

Hopefully, with some careful attention to tactics and good substitutions in critical games, it should give you all the elation of guiding your country's team through to the championships of the World Cup Finals.

It will let you manage any of the 24 countries involved in the 1982 World Cup but expect to have a more difficult time if you pick El Salvador than if you choose Brazil.

It invites you to enter your team and then publishes the draw for the competition with initially six groups of four. Set out the countries you think will be stumbling blocks to your continuation in the competition and send off your scouts to watch them.

There are other considerations too. Choose your formation carefully and if you need to boost your goal difference to qualify, try to manufacture an open game.

Then it's out of your hands and the two teams are up against one another with a running commentary of events. Keep a close check on which of your players seem to pose possession and play badly, these are the one's you will want to substitute.

Also watch for which team is gaining the most possession in midfield — you may need to change tactics.

Check on how the goals are scored — it could be important to tighten up your defence to certain situations or to find out which of your own attacking ploys is paying dividends.

Half-time comes around and this is your chance to change your tactics if you have noticed things going wrong.

At the end of the day, win, lose or draw, you will have to sit back and watch the other results of the day being typed out and see if your predictions are coming true.

```
   10 *TV 255,1
   20 MODE 7
   30 DIM K$(12)
   40 J$=STRING$(150,"?"):J$=""
   50 E1=0:E2=0:X1=0:X2=0
   60 DIM D(4),W(4),D9(4),F9(4),A9(4),H%(4,3),D8(4),T9(4),P9(4),R%(24),S8(4),N1
(24),B%(24),O%(6,4),A%(3,3),B%(3,3),C%(3,3),D%(3,3),T4$(20),A$(24),F%(24),I%(3,3)
,J%(3,3),M%(24,21),N%(24),T%(24),U%(24),V%(24),W%(24),X%(24),Y%(24)
   70 DIM Z%(24),Z9$(12),A1$(9),A2$(9),EX(11):V=0:B4=0
   80 DEF FNR(X)=INT(RND(1)*X)+1
   90 DATA BRAZIL,ARGENTINA,W.GERMANY,YUGOSLAVIA,HUNGARY,BELGIUM,ITALY,POLAND,F
RANCE,CZECHOSLOVAKIA,SPAIN,ENGLAND,SCOTLAND,N.IRELAND,PERU,AUSTRIA,CHILE,EL SALV
ADOR,HONDURAS,ALGERIA,ZEALAND,CAMEROON,KUWAIT,RUSSIA
  100 DATA 1,10,1,2,1,1,0,0,0,0,1,1,2,1,0,2,2
  110 DATA " HITS THE BALL TOO FAR AHEAD OF "," "S PASS IS MISCONTROLLED BY ","
LOSES THE BALL IN A MISUNDERSTANDING WITH "," HITS A LONG BALL TO "," PASSES WID
E TO "," CROSSES TO "," PLAYS A HIGH BALL TO "," COLLECTS A PASS FROM "
  120 DATA " PLAYS A ONE-TWO WITH "," IS SENT AWAY BY "," WINS A FREE KICK FROM
"," MOVES INSIDE "," SWERVES PAST "," DUMMIES "," RUNS ROUND "," RACES PAST ","
SHRUGS OFF A CHALLENGE FROM "," IS TACKLED BY "," "S PASS IS CUT OUT BY "
  130 DATA "'S CROSS IS HEADED AWAY BY ",5,15,30,20,5,15,15,30,5,5,30,15,15,5,3
0,20,15,5,5,20,15,15,5,30,20,15,5,"'S CHIP FOR GOAL IS HEADED AWAY BY ",LOSES T
HE BALL TO "," IS TACKLED BY "," "S VOLLEY IS PUNCHED CLEAR BY "
  140 DATA "'S FIERCE DRIVE IS WELL SAVED BY "," BLASTS THE BALL WIDE "," ROUNDS
THE KEEPER AND MISKICKS "," BEATS TWO DEFENDERS AND SHOOTS WIDE "," STUMBLES AN
D LOSES THE BALL "," 'S CHIP FOR GOAL FINDS THE BACK OF THE NET"
  150 DATA "BLASTS THE BALL HOME "," VOLLEYS INTO THE ROOF OF THE NET "," TAPS T
HE BALL IN FROM 5 YARDS "," HITS A LOW SHOT INTO THE NET "," SHOT BOUNCES UNDER
THE KEEPER," 'S SHOT SHOT IS DROPPED BY THE KEEPER,"," LETS FLY WITH A LONG SHOT"
  160 DATA " STEPS INSIDE THE FULLBACK,ROUNDS THE KEEPER AND SLOTS HOME"
  170 PROCSORT:CLS:PRINT"CHOOSE YOUR TEAM-ENTER A NO. FROM LIST"
  180 X=1:PROCCHOOSE:PROCTEAM
  190 CLS:PRINT"NOW KEY IN THE NAMES OF YOUR PLAYERS":PRINT CHR$(136);"--MAXIMU
M OF 15 LETTERS--"
  200 FOR I=1TO12
  210 IF I=1 THEN PRINT"GOALKEEPER "
  220 IF I)1AND(6 THEN PRINT"DEFENDER "+STR$(I-1)
  230 IF I)5AND(9 THEN PRINT"MIDFIELD "+STR$(I-5)
  240 IF I)8AND(12 THEN PRINT"STRIKER "+STR$(I-8)
  250 IF I=12 THEN PRINT"SUBSTITUTE "
  260 INPUT K$(I)
  270 IF LEN(K$(I))>15 THEN PRINT"NAME IS TOO LONG.RE-ENTER.":GOTO 260
  280 NEXT I
  290 CLS:PRINT "YOU ARE MANAGER OF ";CHR$(136);A$(T)
  300 PRINT "YOUR AIM IS TO WIN THE 1982 WORLD CUP"
  310 PROCWAIT
  320 FOR I=1TO6
  330 S=0
  340 Y=FNA(24)
  350 IF B%(Y)=1OTHEN GOTO 340
  360 S=S+1
  370 B%(Y)=1:O%(I,S)=Y
  380 IF S=4 THEN GOTO 400
  390 GOTO 340
  400 NEXT I
  410 CLS:PRINT"THE DRAW IS:--"
  420 FOR I=1TO3
  430 PRINT:PRINT "GP. ";STR$(I);TAB(20)"GP. ";STR$(I+3):PRINT
  440 FOR J=1TO4
  450 PRINTA$(O%(I,J));TAB(20)A$(O%(I+3,J))
  460 NEXT J:NEXT I
  470 PRINT
  480 PROCCONTINUE:PROCSCOUT:PROCFIXTURE:PROCSTAGE:PROCCONTINUE:PROCSECFIXT:
PROCSEMI:PROCSEMIPLAY:PROCFINAL
  490 PROCCONTINUE
  500 IF E2)E1 THEN B2=X2:B3=X1
  510 IF E1)E2 THEN B2=X1:B3=X2
  520 CLS:PRINTTAB(0,6)"CONGRATULATIONS TO:--":PRINTTAB(10,10);CHR$(136);A$(B2)
```

18

```
530  PRINTTAB(0,15);"1982 WORLD CUP WINNERS"
540  PRINTTAB(0,21)"DO YOU WISH TO PLAY AGAIN?"
550  INPUT "TYPE 'Y' OR 'N'" S$
560  IF ASC(S$)=89 THEN CLS:RUN
570  IF ASC(S$)=78 THEN CLS
580  IF ASC(S$)<>89 AND ASC(S$)<>78 THEN GOTO 550
```

```
590  END
600  DEFPROCSORT
610  FOR I=1TO24
620  F%(I)=INT(RND(1)*3)+1
630  READ G$(I)
640  X%(I)=FNA(3)
650  Y%(I)=FNA(3)
660  Z%(I)=FNA(3)
670  U%(I)=FNA(3)
680  V%(I)=FNA(3)
690  W%(I)=FNA(3)
700  WX%(I)=FNA(3)
710  NEXT I
720  FOR I=1TO3
730  FOR J=1TO3
740  D%(I,J)=10
750  READ I%(I,J):READ J%(I,J)
760  NEXT J:NEXT I
770  FOR I=1TO26
780  READ T$#(I)
790  NEXT I
800  FOR I=1TO3
810  FOR J=1TO3
820  READ A%(I,J)
830  READ B%(I,J)
840  READ C%(I,J)
850  NEXT J:NEXT I
860  FOR I=1TO3
870  R%(I)=INT(RND(1)*10)+21
880  NEXT I
890  FOR I=4TO11
900  R%(I)=INT(RND(1)*10)+16
910  NEXT I
920  FOR I=12TO14
```

```
930  R%(I)=20
940  NEXT I
950  FOR I=15TO17
960  R%(I)=INT(RND(1)*5)+16
970  NEXT I
980  FOR I=18TO23
990  R%(I)=INT(RND(1)*5)+11
1000 NEXT I
1010 R%(24)=INT(RND(1)*22)+11
1020 D%(1,1)=5
1030 D%(3,3)=15
1040 FOR I=1TO12
1050 Z9%(I)=" NO. "+STR$(I)
1060 NEXT I
1070 Z9$(I)="THEIR GOALKEEPER "
1080 FOR I=1TO9
1090 READ A1$(I)
1100 NEXT I
1110 FOR I=1TO9
1120 READ A2$(I)
1130 NEXT I
1140 ENDPROC
1150 DEF PROCCHOOSE
1160 FOR I=1TO12
1170 IF X=1 THEN GOTO 1240
1180 IF (T-1)*(T-12-1)<>0 THEN GOTO 1240
1190 IF I=I+12 THEN GOTO 1220
1200 PRINTTAB(20);STR$(I+12);". ";A$(I+12)
1210 GOTO 1250
1220 PRINTSTR$(I);". ";A$(I)
1230 GOTO 1250
1240 PRINT STR$(I);". ";A$(I);TAB(20);STR$
```

```
(I+12);". ";A$(I+12)
1250 NEXT I
1260 PRINT:PRINT
1270 ENDPROC
1280 DEF PROCTEAM
1290 INPUT"WHICH TEAM?"T$
1300 T=VAL(T$)
1310 IF T<1 THEN GOTO 1340
1320 IF T>24 THEN GOTO 1340
1330 GOTO 1360
1340 PRINT"ENTER A NO. BETWEEN 1 & 24"
1350 GOTO 1290
1360 ENDPROC
1370 DEF PROCWAIT
1380 TIME=0:REPEAT:UNTIL TIME=400
1390 ENDPROC
1400 DEF PROCCONTINUE
1410 PRINT"PRESS ANY KEY TO CONTINUE"
1420 Z$=GET$
1430 IF Z$="" THEN 1420
1440 ENDPROC
1450 DEF PROCSCOUT
1460 CLS
1470 PRINT"SCOUTS CAN COMPILE DOSSIERS ON 4 TEAMS"
1480 PRINT"ENTER 4 NOS. FROM THE FOLLOWING!"
1490 PRINT"SEPARATED BY COMMAS";PRINT"========= == ======":PRINT
1500 X=2
1510 PROCCHOOSE
1520 INPUT S1,S2,S3,S4
1530 IF(S1-T)*(S2-T)*(S3-T)*(S4-T)=0 THEN GOTO 1570
1540 IF(S1-S2)*(S1-S3)*(S1-S4)*(S2-S3)*(S2-S4)*(S3-S4)=0 THEN 1570
1550 IF S1(1 OR S1)24 OR S2(1 OR S2)24 OR S3(1 OR S3)24 OR S4(1 OR S4)24 THEN
```

```
1930 IF W6=4 THEN PROCX
1940 IF W6=4 THEN GOTO 1960
1950 K1=1:K2=3:J1=4
1960 FOR I=1TOW6
1970 PROCPOS
1980 PROCPOSPRINT
1990 NEXT I
2000 ENDPROC
2010 DEF PROCPOS
2020 FOR J=1TOJ1
2030 Q(J)=0:F9(J)=0:A9(J)=0:P9(J)=0:W(J)=0:D8
(J)=0:D9(J)=0
2040 NEXT J
2050 FOR J=1TOJ1
2060 T9(J)=DX(I,J)
2070 FOR K = K1 TO K2
2080 IF MX(T9(J),K+7) THEN GOTO 2190
2090 F9(J)=MX(T9(J),K+7)+F9(J)
2100 A9(J)=MX(T9(J),K+14)+A9(J)
2110 Z7=MX(T9(J),K+7)
2120 Z6=MX(T9(J),K+14)
2130 IF Z7=Z6 THEN Q(J)=Q(J)+1
2140 Q(J)=Q(J)+1
2150 IF Z7>Z6 THEN D9(J)=D9(J)+1
2160 IF Z6>Z7 THEN W(J)=W(J)+1
2170 IF Z6=Z7 THEN P9(J)=P9(J)+2
2180 IF Z6>Z7 THEN P9(J)=P9(J)+3
2190 NEXT K
2200 NEXT J
2210 F2=0
2220 FOR J=1TOJ1-1
2230 IF P9(J)<P9(J+1) THEN PROCSWAP
2240 IFP9(J)=P9(J+1) THEN PROCGOALDIFF
2250 NEXT J
2260 IF F2=1 THEN GOTO 2210
2270 ENDPROC
2280 DEF PROCGOALDIFF
2290 IF D8(J)<D8(J+1)THEN PROCSWAP
2300 IF D8(J)>D8(J+1) THEN ENDPROC
2310 IF F9(J)<F9(J+1)THEN PROCSWAP
2320 IF F9(J)>F9(J+1)THEN ENDPROC
2330 IF FNA(2)=1 THEN PROCSWAP
2340 ENDPROC
2350 DEF PROCSWAP
2360 F3=T9(J):T9(J)=T9(J+1):T9(J+1)=F3
2370 F3=F9(J):F9(J)=F9(J+1):F9(J+1)=F3
2380 F3=A9(J):A9(J)=A9(J+1):A9(J+1)=F3
2390 F3=D8(J):D8(J)=D8(J+1):D8(J+1)=F3
2400 F3=D9(J):D9(J)=D9(J+1):D9(J+1)=F3
2410 F3=P9(J):P9(J)=P9(J+1):P9(J+1)=F3
2420 F3=W(J):W(J)=W(J+1):W(J+1)=F3
2430 F3=Q(J):Q(J)=Q(J+1):Q(J+1)=F3
2440 F2=1
2450 ENDPROC
2460 DEF PROCPOSPRINT
2470 PRINT
2480 F$="F ":A4$="A "
2490 IF W6=6 THEN B$=CHR$(I+48)
2500 IF W6=4 THEN B$=CHR$(I+64)
2510 PRINT"GP. ";B$;" LEAGUE TABLE"
2520 FOR J=1TOJ1
2530 IF F9(J)>9 THEN F$=" F "
2540 IF A9(J)>9 THEN A4$=" A "
2550 NEXT J
2560 PRINTTAB(20);" P W D L ";F$;A4$"Pts."
2570 FOR J=1TOJ1
2580 P4$=" ":P5$=" "
2590 L9=Q(J)-W(J)-D9(J)
2600 IF F$=" F " THEN GOTO 2770
2610 IF A4$=" A " THEN GOTO 2790
2620 Y1$=STR$(J)+". "+A$(T9(J))
2630    PRINTY1$;TAB(21);Q(J);" ";W(J);" ";D9(J);" ";
:L9;P4$;F9(J);P5$;A9(J);" ";
```

```
                              GOTO 1570
                         1560 ENDPROC
                         1570 PRINT"RE-ENTER 4 NOS.
                              FROM ABOVE LIST"
                         1580 GOTO1520
                         1590 ENDPROC
                         1600 DEF PROCFIXTURE
                         1610 W6=6
                         1620 D1=1
                         1630 H2=1:A2=4:PROCRESULT
                         1640 H2=1:A2=4:PROCRESULT
                         1650 H2=2:A2=3:PROCRESULT
                         1660 H2=4:A2=2:PROCRESULT
                         1670 H2=3:A2=1:PROCRESULT
                         1680 H2=2:A2=3:PROCRESULT
                         1690 ...
                         1700 DEF PROCRESULT
                         1710 D1=D1+1
                         1720 PROCPLAYCHECK
                         1730 CLS
                         1740 PRINT"RESULTS FOR ";D1;" JUNE '82"
                         1750 PRINT
                         1760 FOR I=1TO6
                         1770 H=DX(I,H2):IA=DX(I,A2)
                         1780 IF H=T THEN B=P2:C=P3:GOTO 1810
                         1790 IF T=A2 THEN B3:C=P2:GOTO 1810
                         1800      GOSUB 2820
                         1810 PRINT"GP. ";I;" ";A$(H);" ";B;
                              " ";A$(A);" ";C
```

```
1820 NEXT I
1830 IF D1=18 THEN PROCCONTINUE:PROCTABLE
1840 PRINT
1850 IF D1=18 THEN ENDPROC
1860 PRINT"PRESS 'L' FOR LEAGUE TABLES"
1870 PRINT"          ANY OTHER KEY TO CONTINUE"
1880 Z$=GET$
1890 IFZ$="" THEN GOTO 1880
1900 IF Z$="L" THEN PROCTABLE
1910 ENDPROC
1920 DEF PROCTABLE
```

```
2640 IF W6=6 THEN PROCSEMITEAM
2650 IF W6=4 THEN GOTO 2670
2660 IF J (3 THEN PROCY
2670 NEXT J
2680 IF W6=6 THEN 2710
2690 IF(4 THEN 2760
2700 GOTO 2730
```

20

```
3320 IF J=2 THEN HX(3,2)=T9(J)
3330 GOTO 3240
3340 IF J=1 THEN HX(3,3)=T9(J)
3350 IF J=2 THEN HX(1,3)=T9(J)
3360 GOTO 3240
3370 IF J=1 THEN HX(4,3)=T9(J)
3380 IF J=2 THEN HX(2,3)=T9(J)
3390 GOTO 3240
3400 IF J=1 THEN HX(2,3)=T9(J)
3410 IF J=2 THEN HX(2,3)=T9(J)
3420 GOTO 3240
3430 DEF PROCGAMEPPVAL
3440 IF DX(I,H2)<>T THEN Z=DX(I,H2)
3450 IF DX(I,H2)=T THEN Z=DX(I,A2)
3460 ENDPROC
3470 DEF PROCGAMEPLAY
3480 PRINTA$(Z):PRINT
3490 CLS:PRINTA$(Z):PRINT
3500 PROCSCOUTREF:PROCTACTSEL:
     PRODCPPTEAM
3520 Z3=0:Z4=0:W1=0
3530 K4=DX(Z(Z),Z9(Z))+30:
     W3=RX(T):W4=2*I%(FX(T),
     FX(Z)):W4=W4+2*IX(FX(Z),FX(T))
3550 FOR I=1TO11:EX(I)=0:NEXT I
3560 W1=0
3570 CLS:PRINT"THE REF BLOWS HIS
     WHISTLE TO START GAME"
3580 FOR I=1TO4
3590 Z1=T
3600 IF FNA(W3+W4)<RX(T) THEN Z1=Z
3610 IF Z1=Z THEN Z8=T
3620 IF Z1=T THEN Z8=T
3630 PROCDETPOSS
3640 Z8=" HAVE "
3650 PROCPOSSREB
3660 PRINTA$(Z1);Z8;"POSSESSION":PRINT
3670 IF Z1=T THEN PROCPLAYRAN
3680 IF Z1=Z THEN PROCRANPLAY
3690 J$=Z5#+T4*(G1)+Z6#:PROCMOVEPRI
3700 PRINT:PROCWAIT
3710 Z2=Z2=Z1:Z1=Z
3720 IF Z2=1 THEN U1=U1+1:EX(A3)=EX(A3)+1
3730 IF Z2=2 THEN PROCSCORCHAN
3740 IF Z2=2 THEN PROCHALTIM
3750 NEXT J
3760 H=T:A=Z
3770 PRINT"NOTHING ELSE OF SIGNIFICANCE
     HAPPENS"
3780 PRINT:PRINT"FINAL SCORE"
3790 PRINTA$(T);" ";B;" ";A$(Z);" ";C
3800 P2=B:P3=C:P1=C:CONTINUE
3810 IF X3=0 THEN GOSUB 2990:ENDPROC
3820 IF V=0 THEN ENDPROC
3830 GOSUB 2990:ENDPROC
3840 IF X5=1 THEN 3900
3850 Z3=0:Z4=0:K4=15
3860 X5=1
3870 CLS:PRINT"EXTRA TIME BEING PLAYED"
3880 GOTO 3580
3890 X5=0
3900 CLS:PRINT"PENALTIES WILL DECIDE THE RESULT"
3910 J$=" SHOOTS WIDE"
3920 IF RND(1)>.5 THEN B=B+1:J$=" SCORES FROM THE SPOT"
3930 J$=K$(1+FNA(10))+J$:PROCMOVEPRI
3940 J$=" SHOOTS WIDE"
3950 IF RND(1)>.5 THEN C=C+1:J$=" SCORES FROM THE SPOT"
3960 J$=Z9#(1+FNA(10))+J$:PROCMOVEPRI
3970 IF B=C THEN 3910
3980 PRINT"FINAL SCORE ":PRINTA$(T);" ";B;" ";A$(Z);" ";C

2710 IF I<3 THEN 2760
2720 IF (-4)*(I-5)=0 THEN 2760
2730 PRINT"PRESS ANY KEY TO CONTINUE"
2740 Z$=GET$
2750 IF Z$="" THEN GOTO 2740
2760 ENDPROC
2770 IF F9(J)<10 THEN P4$=" "
2780 GOTO 2610
2790 IF A9(J)<10 THEN P5$=" "
2800 GOTO 2620
2810 ENDPROC
2820 B=0:C=0
2830 IF FNA(100)<60 THEN GOTO 2850
2840 B=I%(FX(H),FX(A)):C=J%(FX(H),FX(A))
2850 B1=FNA(8):C1=FNA(8)
2860 B1=B1+RX(H):C1=C1+RX(A)
2870 B=INT((ABS(B1-C1))/5)
2880 IF FNA(2)=1 THEN 2950
2890 B=B+FNA(2)-1
2900 C=C+FNA(2)-1
2910 IF FNA(2)=2 THEN GOTO 2990
2920 IF RX(H)<RX(A) THEN B=B+FNA(2)-1
2930 IF RX(A)<RX(H) THEN C=C+FNA(2)-1
2940 GOTO 2990
2950 IF B<C THEN C=C+D
2960 IF B>C THEN C=C+B
2970 IF FNA(500))498 THEN B=B+FNA(3)
2980 IF FNA(500))498 THEN C=C+FNA(3)
2990 NX(H)=NX(H)+1:N%(A)=N%(A)+1
3000 MX(N,NX(H))=A
3010 MX(A,N%(A))=H
3020 MX(A,N%(H)+7)=B
3030 MX(H,N%(A)+7)=C
3040 MX(N,NX(H)+14)=C
3050 MX(A,N%(A)+14)=B
3060 RETURN
3070 DEF PROCPLAYCHECK
3080 FOR I=1TOW6
3090 IF(DX(I,H2)-T)*(DX(I,A2)-T)=0
     THEN PROCPPVAL
3110 NEXT I
3120 DEF PROCX
3130 K1=4:K2=5:J1=3
3140 FOR I=1TO3
3150 FOR J=1TO3
3160 DX(I,J)=HX(I,J)
3170 NEXT J:NEXT I
3180 ENDPROC
3190 DEF PROCSEMITEAM
3200 S8(1)=T9(J)
3210 ENDPROC
3220 DEF PROCY
3230 ON I GOTO 3250,3280,3310,3340,
     3370,3400
3240 ENDPROC
3250 IF J=1 THEN HX(1,1)=T9(J)
3260 IF J=2 THEN HX(3,1)=T9(J)
3270 GOTO 3240
3280 IF J=1 THEN HX(2,1)=T9(J)
3290 IF J=2 THEN HX(4,1)=T9(J)
3300 GOTO 3240
3310 IF J=1 THEN HX(1,2)=T9(J)
```

```
4000 P2=B:P3=C
4010 ENDPROC
4020 DEF PROCSCOUTREP
4030 D4=0
4040 IF (Z-S1)*(Z-S2)*
(Z-S3)*(Z-S4)=0 THEN D4=1
4050 IF D4=1
THEN J$="YOUR SCOUTS
REPORT ON "+A$(Z):PROCMOVEPRI
4060 E=Z
4070 IF D4=1 THEN PROCCONTINUE
4080 PROCREP:ENDPROC
4090 DEF PROCTACTSEL
4100 CLS:PRINT"WHAT FORMATION
SHALL WE PLAY BOSS?"

4110 FOR F1=1TO3
4120 PROCDFORM
4130 PRINTF1;" ";C$
4140 NEXT F1
4150 PROCZ2FX(T):E9:PRINT
4160 PRINT"WHAT ARE THE DEFENCE PLANS BOSS?"
4170 FOR F1=1TO3
4180 PROCDEFTACT
4190 PRINTF1;" ";C$
4200 NEXT F1
4210 PROCZ:XX(T):E9:PRINT
4220 PRINT"WHAT ATTACK PLANS GUV?"
4230 FOR F1=1TO3
4240 PROCATTACT
4250 PRINTF1;" ";C$
4260 NEXT F1
4270 PROCZ:YX(T):E9:PRINT
4280 PRINT"WHAT ABOUT MIDFIELD BOSS?"
4290 FOR F1=1TO3
4300 PROCMIDTACT
4310 PRINTF1;" ";C$
4320 NEXT F1
4330 PROCZ:ZX(T):E9:PRINT
4340 PRINT"WHAT IF WE GET A FREEKICK UPFIELD BOSS?"
4350 FOR F1=1TO3
4360 PROCFREETACT
4370 PRINTF1;" ";C$
4380 NEXT F1
4390 PROCZ:TX(T):E9:PRINT
4400 PRINT"HOW DO WE DEFEND AGAINST A FREEKICK?"
4410 FOR F1=1TO3

4420 PROCFREEDEF
4430 PRINTF1;" ";C$
4440 NEXT F1
4450 PROCZ:VX(T):E9:PRINT
4460 PRINT"WHAT SHALL WE DO WITH
OUR CORNERS?"
4470 FOR F1=1TO3
4480 PROCCORNTACT
4490 PRINTF1;" ";C$
4500 NEXT F1
4510 PROCZ:VX(T):E9:PRINT
4520 PRINT"WHAT ABOUT THEIR CORNERS?"
4530 FOR F1=1TO3
4540 PROCCORNDEF
4550 PRINTF1;" ";C$
4560 NEXT F1
4570 PROCZ:WX(T):E9
4580 ENDPROC
4590 DEF PROCOPPTEAM
4600 CLS:PRINT"DO YOU WISH TO TYPE
IN THE OPPOSITION PLAYERS' NAMES?"
4610 INPUT"TYPE Y OR N "D3$
4620 IF ASC(LEFT$(D3$,1))=78 THEN 4610
PROCPNAME:ENDPROC
4630 IF ASC(LEFT$(D3$,1))89 THEN 4610
4640 FOR I=1TO12
4650 PRINT"ENTER NAME OF PLAYER ";I:
IF I=1
PRINT CHR$(136);"—MAXIMUM OF 5 LETTERS"
4660 INPUT Z9$(I)
4670 IF LEN(Z9$(I))15 THEN PRINT"NAME
IS TOO LONG. RE-ENTER."GOTO 4660

4680 NEXT I
4690 ENDPROC
4700 DEF PROCDETPOSS
4710 G1=FNA(20)
4720 IF G1(4 THEN Z2=1
4730 IF G1(4 THEN ENDPROC
4740 IF G1)17 THEN Z2=5
4750 IF G1)17 THEN ENDPROC
4760 Z2=2:ENDPROC
4770 DEF PROCOSSREG
4780 IF Z4()1 THEN ENDPROC
4790 IF Z3()21 THEN ENDPROC
4800 Z8$=" REGAIN "
4810 ENDPROC
4820 DEF PROCPLAYRAN
4830 A3=FNA(10)+1:Z5$=K$(A3)
4840 IF G1)10 THEN Z6$=Z9$(FNA(10)+1)
4850 IF G1)10 THEN ENDPROC
4860 A4=FNA(10)+1
4870 IF A4=A3 THEN 4860
4880 Z6$=K$(A4)
4890 ENDPROC
4900 DEF PROCRANPLAY
4910 A3=FNA(10)+1:Z5$=Z9$(A3)
4920 IF G1)10 THEN Z6$=K$(FNA(10)+1)
4930 IF G1)10 THEN ENDPROC
4940 A4=FNA(10)+1
4950 IF A4=A3 THEN 4940
4960 Z6$=Z9$(A4):ENDPROC
4970 DEF PROCMOVEPRI
4980 IF LEN(J$)(=39 THEN PRINTJ$
4990 IF LEN(J$)(39 THEN PRINT
5000 IF LEN(J$)(39 THEN ENDPROC
5010 FOR J=39TO1 STEP-1
5020 IF ASC(MID$(J$,J,1))=32 THEN PRINT
LEFT$(J$,J):J$=RIGHT$(J$,LEN(J$)-J):J=0

5030 NEXT J
5040 GOTO 4980
5050 ENDPROC
5060 DEF PROCSCORCHAN
5070 Z4=1:G3=FNA(7)
5080 IF G3(8 THEN Z1$=Z6$
5090 IF G1)7 THEN Z1$=Z5$
5100 ON G3 GOSUB 5120,5120,5120,5120,5160,5160,5250
5110 ENDPROC
5120 G3=FNA(100)
5130 IF C%(Y%(Z3),X%(Z8))100-G3+B4 THEN PROCGDAL:RETURN
5140 PROCA
```

```
5150    RETURN
5160    PRINT PRINTA$(Z1);" WIN A CORNER"
5170    IF Z1=T THEN Z1%=K%(5+FNA(6))
5180    IF Z1=Z THEN Z1%=Z9%(5+FNA(6))
5190    J$="FROM THE KICK THE BALL REACHES"+" "+Z1$
5200    PROCMOVEPRI
5210    G3=FNA(100)
5220    IF B%(Y%(Z3),X%(Z8))>100-G3+B6 THEN B6=B6+2:PROCGOAL:RETURN
5230    PROCA
5240    RETURN
5250    PRINT
5260    IF Z1=T THEN Z5%=Z9%(1+FNA(4))
5270    IF Z1=Z THEN Z5%=K%(1+FNA(4))
5280    J$=J$+" IS BROUGHT DOWN BY "+Z5$+".THE REF AWARDS "+A$(Z1)
5290    J$=J$+" A FREEKICK JUST OUTSIDE THE BOX":PROCMOVEPRI
5300    PRINT:PRINT"FROM THE FREEKICK "
5310    G3=FNA(100)
5320    IF B%(Y%(Z3),X%(Z8))>100-G3+B5 THEN B5=B5+2:PROCGOAL:RETURN
5330    PROCA
5340    RETURN
5350    DEF PROCHALTIM
5360    PRINT:PRINT"HALFTIME SCORE:"
5370    PRINTA$(T);" ";B;" ";A$(Z);" ";C
5380    PRINT"DO YOU WISH TO CHANGE TACTICS?"
5390    INPUT"TYPE 'Y' OR 'N' "Z$
5400    IF ASC(LEFT$(Z$,1))<>78 AND ASC(LEFT$(Z$,1))<>89 THEN 5390
5410    IF ASC(LEFT$(Z$,1))=89 THEN PROCTACTSEL
5420    PROCSUB:ENDPROC
5430    DEF PROCREP
5440    PRINT"PROFILE ON ";A$(E):PRINT
5450    PROCPASTRES
5460    F1=X%(E):PROCATTACK
5470    PROCDEFTACT
5480    PRINT
5490    PRINT"IN DEFENCE THEY";C$:PRINT
5500    F1=Y%(E):PROCDEFTACT
5510    PRINT"IN ATTACK THEY USE THE";C$:PRINT
5520    F1=Z%(E):PROCMIDTACT
5530    PRINT"IN MIDFIELD THEY";C$:PRINT
5540    IF D4<>0 THEN PROCCONTINUE:ENDPROC
5550    PRINT"IN FREEKICKS AROUND THE BOX THEY USE A":PRINTC$
5560    F1=TX%(E):PROCFREETACT
5570    F1=U%(E):PROCREEDEF
5580    PRINT"AND DEFENDING AGAINST FREEKICKS THEY":PRINTC$:PRINT
5590    F1=VX%(E):PROCCCORNTACT
5600    PRINT"FROM A CORNER THEY";C$
5610    F1=W%(E):PROCCONDEF
5620    PRINT"WHEN FACED WITH A CORNER THEY":PRINTC$:PRINT
5630    F1=F%(E):PROCFORM
5640    PRINT"THEY NORMALLY PLAY";C$:"FORMATION":PRINT
5650    PROCCONTINUE
5660    ENDPROC
5670    DEF PROCFORM
5680    IF F1=1 THEN C$=" A 4-3-3 "
5690    IF F1=2 THEN C$=" A 4-4-2 "
5700    IF F1=3 THEN C$=" A 4-2-4 "
5710    ENDPROC
5720    DEF PROCDEFTACT
5730    IF F1=1 THEN C$=" USE A SWEEPER "
5740    IF F1=2 THEN C$=" INTERCEPT PASSES "
5750    IF F1=3 THEN C$=" SHADOW ATTACKERS "
5760    ENDPROC
5770    DEF PROCATTACT
5780    IF F1=1 THEN C$=" FAST BREAK "
5790    IF F1=2 THEN C$=" EARLY CROSS "
5800    IF F1=3 THEN C$=" SLOW BUILD-UP "
5810    ENDPROC
5820    DEF PROCMIDTACT
5830    IF F1=1 THEN C$=" TACKLE HARD "
5840    IF F1=2 THEN C$=" MARK TIGHTLY "
5850    IF F1=3 THEN C$=" FIND SPACE "
5860    ENDPROC
5870    DEF PROCFREETACT
5880    IF F1=1 THEN C$=" DIRECT SHOT "
5890    IF F1=2 THEN C$=" CHIP TO THE FAR POST "
5900    IF F1=3 THEN C$=" TEE-UP FOR SHOT "
```

```
5910 ENDPROC
5920 DEF PROCFREEDEF
```

```
5930 IF F1=1 THEN C$=" MAKE A WALL "
5940 IF F1=2 THEN C$=" MARK MAN-TO-MAN "
5950 IF F1=3 THEN C$=" RUSH THE KICKER "
5960 ENDPROC
5970 DEF PROCCORNTACT
5980 IF F1=1 THEN C$=" PLAY IT SHORT "
5990 IF F1=2 THEN C$=" AIM FOR THE FAR POST "
6000 IF F1=3 THEN C$=" AIM FOR THE NEAR POST "
6010 ENDPROC
6020 DEF PROCCORNDEF
6030 IF F1=1 THEN C$=" MOVE OUT FAST "
6040 IF F1=2 THEN C$=" RELY ON THE GOALKEEPER "
6050 IF F1=3 THEN C$=" USE CLOSE MARKING "
6060 ENDPROC
6070 DEF PROCZ
6080 INPUT "ENTER A NO. BETWEEN 1 & 3:"E$
6090 IF LEN(E$)()1 THEN 6140
6100 IF ASC(E$)(49 THEN 6140
6110 IF ASC(E$)>51 THEN 6140
6120 E9=VAL(E$)
6130 ENDPROC
6140 PRINT"PLEASE RE-ENTER"
6150 GOTO 6080
6160 ENDPROC
```

```
6170 DEF PROCOPPNAME
6180 FOR I=1TO12
6190 Z9$(I)="NO. "+STR$(I)
6200 NEXT I
6210 Z9$(1)="THEIR GOALKEEPER "
6220 ENDPROC
6230 DEF PROCGOAL
6240 PRINT
6250 B4=B4+2.5:J$=Z1$+A2$(FNA(9)):PROCMOVEPRI
6260 PROCSCORE:PROCSUB
6270 IF I=K4 THEN ENDPROC
6280 PRINT"FROM THE KICK-OFF"
6290 ENDPROC
6300 DEF PROCSCORE
6310 J$="IT'S A GOAL!   "+A$(Z)+" HAVE SCORED":PROCMOVEPRI
6320 IF Z1=T THEN B=B+1
6330 IF Z1=Z THEN C=C+1
6340 D2=I*2
6350 IF RND(1)),5 THEN D2=D2-1
6360 PRINT
6370 Z$=" MINUTES"
6380 IF D2=1 THEN Z$=" MINUTE"
6390 PRINT"SCORE AFTER ";D2;Z$
6400 PRINT:PRINT A$(T);" ";B;" ";A$(Z);" ";C
6410 Z2=1:ENDPROC
6420 DEF PROCA
6430 G3=FNA(9):Z1$=Z1$+A1$(G3)
6440 IF Z8=T THEN H$=" "+K$(1+FNA(4))
6450 IF Z8=Z THEN H$=" "+Z9$(1+FNA(4))
6460 IF G3(4 THEN Z1$=Z1$+H$
6470 IF Z8=T THEN J$=Z1$+PROCMOVEPRI:Z2=1:ENDPROC
6480 IF Z8=Z THEN H$=" "+K$(1)
6490 IF Z8=T THEN H$=" "+Z9$(1)
6500 IF G3(6 THEN Z1$=Z1$+H$:PROCMOVEPRI:ENDPROC
6510 J$=Z1$:PROCMOVEPRI:ENDPROC
6520 DEF PROCSUB
6530 IF W1=1 THEN PROCCONTINUE:ENDPROC
6540 PRINT"PRESS 'S' TO BRING ON SUBSTITUTE":PRINT"        ANY OTHER KEY TO CONT
INUE"
6550 Z$=GET$
6560 IF Z$="" THEN 6550
6570 IF ASC(Z$)()83 THEN ENDPROC
6580 CLS:W1=1
6590 W1=1
6600 FOR J=2TO11:PRINTJ;" ";K$(J):NEXT J
6610 PRINT"ENTER A NO. FROM 2 TO 11":PRINT"TO SHOW THE PLAYER TO BE SUBSTITUTE
D"
6620 INPUT K
6630 IF K)11 THEN 6620
6640 IF K(2 THEN 6620
6650 PRINT"J$=K$(K)+" TRUDGES OFF TO BE REPLACED BY "+K$(12):PROCMOVEPRI
6660 Z$=K$(K):K$(K)=K$(12):K$(12)=Z$
6670 W3=W3+(-(U1/10)+E$(K))*2
```

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```
6680  ENDPROC
6690  DEF PROCPASTRES
6700  IF NX(E)=0 THEN ENDPROC
6710  PRINT"RESULTS SO FAR":PRINT
6720  FOR I=1TONX(E)
6730  PRINTA$(E);" ";M%(E,I+7);" ";A$(M%(E,I));" ";M%(E,I+14)
6740  NEXT I
6750  PRINT:PROCCONTINUE
6760  ENDPROC
6770  DEF PROCSECSTAGE
6780  CLS:PRINT"GROUPS FOR THE 2ND. STAGE ARE :-":PRINT
6790  FOR I=1TO2
6800  PRINT"GP.  ";CHR$(64+I);TAB(20);"GP.  ";CHR$(66+I)
6810  PRINT
6820  FOR J=1TO3
6830  PRINTA$(HX(I,J));TAB(20);A$(HX(I+2,J))
6840  NEXT J
6850  PRINT
6860  NEXT I
6870  ENDPROC
6880  DEF PROCSECFIXT
6890  W6=4:D1=27
6900  H2=1:A2=2:PROCSECRES
6910  H2=3:A2=1:PROCSECRES
6920  H2=2:A2=3:PROCSECRES
6930  ENDPROC
6940  DEF PROCSECRES
6950  PROCJ:PROCPLAYCHECK
6960  CLS:PRINT"RESULTS FOR ";D1;" JUNE '82"
6970  PRINT
6980  FOR I=1TO4
6990  H=HX(I,H2):A=HX(I,A2)
7000  IF H=T THEN B=P2:C=P3:GOTO 7030
7010  IF T=A THEN B=P3:C=P2:GOTO 7030
7020  GOSUB 2820
7030  PRINT"GP.  ";CHR$(I+64);" ";A$(H);" ";B;" ";A$(A);" ";C
7040  NEXT I
7050  IF D1=29 THEN PROCCONTINUE:PROCTABLE
7060  PRINT
7070  IF D1=29 THEN ENDPROC
7080  PRINT"PRESS 'L' TO SHOW LEAGUE TABLES":PRINT"          ANY OTHER KEY TO CONTINUE"
7090  Z$=GET$
7100  IF Z$="" THEN GOTO 7090
7110  IF Z$="L" THEN PROCTABLE
7120  D1=D1+1:ENDPROC
7130  DEFPROCJ
7140  FOR I=1TO4
7150  FOR J=1TO3
7160  QX(I,J)=HX(I,J)
7170  NEXT J:NEXT I
7180  ENDPROC
7190  DEF PROCSEMI
7200  CLS:PRINT"SEMI-FINALS":PRINT"==== ======="
7210  FOR I=1TO4
7220  PRINT
7230  NEXT I
7240  PRINTA$(S8(1));TAB(16);"V.        ";A$(S8(3))
7250  FOR I=1TO4
7260  PRINT
7270  NEXT I
7280  PRINTA$(S8(2));TAB(16);"V.        ";A$(S8(4))
7290  FOR I=1TO6
7300  PRINT
7310  NEXT I
7320  PROCCONTINUE:PROCTABLE
7330  ENDPROC
7340  DEF PROCSEMIPLAY
7350  CLS:PRINT"BARCELONA 8th JULY 1982":PRINT
7360  PRINT"SEMI-FINAL":PRINT
7370  PRINTA$(S8(1));" V. ";A$(S8(3))
7380  X3=1
7390  PROCWAIT
7400  X1=S8(1):X2=S8(3)
```

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```
7410 PROCR
7420 CLS:PRINT"SEVILLE 8th JULY 1982":PRINT
7430 PRINT"SEMI-FINAL":PRINT
7440 E2=0:E1=0
7450 PRINTA$(S8(2));" V. ";A$(S8(4))
7460 PROCWAIT
7470 X1=S8(2):X2=S8(4)
7480 PROCR
7490 ENDPROC
7500 DEF PROCB
7510 FOR I=1TO90
7520 IF RND(1))86/90 THEN PROCD
7530 IF I=45 THEN PROCE
7540 IF I/10=INT(I/10) THEN PROCF
7550 NEXT I
7560 IF E1=E2 THEN PROCG
7570 PRINT"FINAL SCORE"
7580 PRINTA$(X1);" ";E1;" ";A$(X2);" ";E2
7590 ENDPROC
7600 DEF PROCC
7610 W5=W5+1
7620 IF V=1 THEN ENDPROC
7630 IF E1)E2 THEN N1(W5)=X1
7640 IF E2)E1 THEN N1(W5)=X2
7650 ENDPROC
7660 DEF PROCD
7670 R7=RND(1)
7680 R9=R%(X1)/(R%(X1)+R%(X2))
7690 CLS:R9=R%(X1)/(R%(X1)+R%(X2))
7700 IF R7)R9 THEN J9=A$(X1)+" HAVE SCORED AFTER "+STR$(I)+" MINUTES"
7710 IF I=1 THEN J9=LEFT$(J9,LEN(J9)-1)
7720 IF R7(R9 THEN PROCMOVEPRI
7730 IF R7)R9 THEN E1=E1+1
7740 IF R7(R9 THEN J9=A$(X2)+" HAVE SCORED AFTER "+STR$(I)+" MINUTES"
7750 IF R7(R9 THEN PROCMOVEPRI
7760 IF R7)R9 THEN E2=E2+1
7770 PROCWAIT:ENDPROC
7780 DEF PROCE
7790 PRINT:PRINT"HALF TIME SCORE!"
7800 PRINT:PRINTA$(X1);" ";E1;" ";A$(X2);" ";E2:PRINT
7810 PROCWAIT:ENDPROC
7820 DEF PROCF
7830 CLS:PRINT"SCORE AFTER ";I;" MINUTES ";":"
7840 PRINTA$(X1);" ";E1;" ";A$(X2);" ";E2
7850 PROCWAIT:ENDPROC
7860 DEF PROCG
7870 CLS:PRINT"AFTER EXTRA TIME"
7880 R4=FNA(2)
7890 IF R4=1 THEN E1=E1+FNA(3)
7900 IF R4=2 THEN E2=E2+FNA(3)
7910 PROCWAIT:ENDPROC
7920 DEF PROCFINAL
7930 V=1:CLS:PRINT"MADRID 11th JULY 1982"
7940 FOR I=1TO6
7950 PRINT
7960 NEXT I
7970 PRINT"CUP FINAL":PRINT"=== ====="
7980 PRINTA$(N1(1));" V. ";A$(N1(2))
7990 PROCWAIT:PROCWAIT
8000 CLS:E1=0:E2=0:X1=N1(1):X2=N1(2)
8010 IF X1=T THEN Z=X1:PROCGAMEPLAY:E1=B:E2=C:GOTO 8040
8020 IF X2=T THEN Z=X2:PROCGAMEPLAY:E1=C:E2=B:GOTO 8040
8030 PROCB:PROCC
8040 ENDPROC
8050 DEF PROCR
8060 IF X1=T THEN Z=X1:PROCGAMEPLAY:E1=B:E2=C:PROCC:GOTO 8090
8070 IF X2=T THEN Z=X2:PROCGAMEPLAY:E1=C:E2=B:PROCC:GOTO 8090
8080 PROCB:PROCC
8090 N%(X1)=N%(X1)+1
8100 M%(X1,6)=X2:M%(X1,13)=E1:M%(X1,20)=E2
8110 N%(X2)=N%(X2)+1
8120 M%(X2,6)=X1:M%(X2,13)=E2:M%(X2,20)=E1
8130 IF (X1-T)*(X2-T))0 THEN PROCCONTINUE
8140 ENDPROC
```

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BOMBER

BY JANEK SIRRS

RUNS ON A BBC MODEL A IN 16K

Ace pilots only need apply for this little excursion into the wild blue yonder. Well, it's not really the flying you have to worry about. It's getting your undercarriage planted firmly back on the ground that's the problem.

You must try to land your ancient fighter plane in the middle of a city. To do this you must create a makeshift runway by bombing the skyscrapers. But you are running out of fuel — so your time is very limited.

```
   10 REM *** BOMBER by J.Sirrs, 1982 ***
   20 HISCORE%=0
   30 MODE5:PROCinit:PROCtitle:MODE4:PROCinst:!&FE00=&10200A
   40 PROCscreen
   50 PX%=PX%+1:IF 2FNS(PX%+2,PY%,N%)=126THENPROCcrash:GOTO370
   60 IFPX%=40ANDPY%<2?THENPRINTTAB(PX%-1,PY%)" ":PX%=0:PY%=PY%+1
   70 IFPX%=37ANDPY%=29THENPRINTTAB(PX%-1,PY%)" ":GOTO40
   80 IFPX%=0GOTO90 ELSEPRINTTAB(PX%-1,PY%)" ":PLANE$
   90 IZ%=INKEY(0):IFIZ%=0ANDBOMB%=0PROCcreatebomb
  100 IFBOMB%=1THENPROCmovebomb
  110 PRINTTAB(11,1):SCORE%:FORL%=1TO400:NEXTL%:GOTO50
  120 DEFPROCcreatebomb
  130 BOMB%=1:BX%=PX%:BY%=PY%
  140 ENDPROC
  150 DEFPROCmovebomb
  160 FORL%=1TO2:IFBY%=PY%ANDNBX%=PX%GOTO170 ELSEPRINTTAB(BX%,BY%)" "
  170 BY%=BY%+1:IF ?FNS(BX%,BY%,N%)=126THENPROCexplosion:SCORE%=SCORE%+1:GOTO210
  180 IFBY%=29THENL%=3:BOMB%=0:GOTO210
  190 IFBOMB%=0THENL%=3:GOTO210
  200 PRINTTAB(BX%,BY%):CHR$(227):SOUND1,-15,BY%*2,1
  210 NEXTL%:ENDPROC
  220 DEFPROCexplosion
  230 FOR2%=TORND(4):FORL%=-1TO1:IFJY%+E2%>29THENE%=5:NEXTE%::L%=3:BOMB%=0:END
PROC
  240 PRINTTAB(BX%,BY%+E%)" "::NEXTE%
  250 BOMB%=0:L%=3:ENDPROC
  260 DEFPROCland
  270 FORL%=1TO50:SOUND1,-15,L%,.05:NEXTL%
  280 FORL%=1TO20:IFLX%/2=INT(LX%/2)THENCH%=22ELSECH%=229
  290 PRINTTAB(38,29)CH%CHR$(CH%):FORD%=1TO750:NEXTD%:NEXTL%
  300 PRINTTAB(12,12)"100 BONUS POINTS":FORL%=1TO5000:NEXTL%:PRINTTAB(12,12)
"                ":SCORE%=SCORE%+100
  310 PRINTTAB(35,29)" ":CHR$(30)
  320 PY%=29:FORPX%=0TO38:PRINTTAB(PX%-1,PY%)" ":PY%=PY%-.2:PRINTTAB(PX%,PY%)
:PLANE$:FORD%=1TO500:NEXTD%:NEXTPX%
  330 SK%=SK%+1:PX%=1:PY%=3:ENDPROC
  340 DEFPROCcrash
  350 FORL%=1TO20:VDU19,0,RND(15),0,0,0,19,1,RND(15),0,0,0:SOUND0,-15,RND(3)+3,1
:NEXTL%
  360 VDU19,0,6,0,0,0,19,1,0,0,0:ENDPROC
  370 CLS:VDU19,0,6,0,0,0,19,1,4,0,0,0
  380 PRINT''"Oh dear you appear to have crashed your"
  390 PRINT''"plane!!!!"
  400 PRINT''"Your final score was :- "SCORE%" points."
  410 IFSCORE%>HISCORE%THENHISCORE%=SCORE%:PRINT''''"Wow! You've just got the best
score yet."
  420 PRINT''"Today's high score is :- "HISCORE%:SCORE%=0:PX%=1:PY%=3:BOMB%=0
  430 PRINT''TAB(8)"ANOTHER GAME (Y/N) ?"
  440 A$=GET$:IFA$="Y"GOTO10ELSEGOTO450
  450 DEFPROCscreen
  460 MODE7
  470 CLS:VDU17,4,0,0,0,19,,7,0,0,0
  480 PRINTTAB(5,1)"SCORE:"TAB(20,1)"HI-SCORE:"HISCORE%
  490 PRINTTAB(0,30)STRING$(40,CHR$(233))CHR$(30)
  500 FORL%=3TO36:BX%=RND(3)+SK%:FORY%=1TOBX%:PRINTCHR$(231):CH
R$(11):NEXTY%:PRINTCHR$(230)CHR$(8):SOUND1,-15,BX%3,1:NEXTPRINTCHR$(230):NEXTL%
  510 PRINTTAB(PX%,PY%):PLANE$
  520 ENDPROC
  530 DEFPROCinit
```

27

```
540 VDU23,224,24,28,31,0,0,0,0,0
550 VDU23,225,63,5,25,255,255,15,2,7,7
560 VDU23,226,228,4,244,252,252,244,4,4,0
570 VDU23,227,126,60,24,60,60,60,60,24
580 VDU23,228,60,60,24,126,153,36,66,129
590 VDU23,229,189,189,153,126,24,36,66,129
600 VDU23,230,0,24,60,126,126,90,90,126
610 VDU23,231,126,90,90,126,126,90,90,126
620 VDU23,232,0,0,50,126,126,90,90,126
630 VDU23,233,255,255,255,255,255,255,255,255
640 SCOREX=0:PX%=1:PY%=3:BX%=0:BY%=0:BOMB%=0:N%=4
650 PLANE%=CHR$(224)+CHR$(225)+CHR$(226)
660 DEF FNS(X,Y,N)=HIMEM+(Y*40+X)*8+N
670 DEFPROCinst
680 DEFPROCinst
690 CLS:VDU19,3,9,0,0,0:PRINTTAB(5,14)"Do you need instructions (Y/N) ?"
700 A$=GET$:IFA$="Y"GOTO710 ELSEIFA$="N"GOTO 790 ELSEGOTO700
710 CLS:VDU19,1,3,0,0,0:COLOUR1:PRINTTAB(13,1)"B O M B E R"
720 PRINT''" Try to land your ancient fighter plane"
730 PRINT'" by destroying all the city skyscrapers"
740 PRINT'" to create a makeshift runway!"
750 PRINT'" Bombs are dropped by pressing any key."
760 PRINT'" WARNING - your fuel is limited!"
770 PRINT''''''" PRESS ANY KEY TO START YOUR FLIGHT"
780 A$=GET$
790 CLS:PRINTTAB(5,12)"What is your skill level (1-3)?"
800 A$=GET$:SK%=VAL(A$):IFSK%>3ORSK%<1GOTO790 ELSEENDPROC
810 DEFPROCtitle
820 CLS:VDU19,0,0,0,0,0,19,3,2,0,0,0
830 TL$="B O M B E R":FOR%=1TOLEN(TL$):COLOUR3:PRINTTAB(L%+3,10):" ":PLANE$=F
ORB%=1TO4
840 COLOUR2:PRINTTAB(L%+5,11+B%)" ":CHR$(10):CHR$(8):CHR$(227):SOUND1,-15,B%*
2,1:NEXTB%:COLOUR1:PRINTTAB(L%+5,16):MID$(TL$,L%,1):SOUND0,-15,5,1:FORX%=1TO100
:NEXTX%:NEXTL%
850 FORL%=1TO12000:NEXTL%:ENDPROC
```

28

S.O.S MISSION

BY NIGEL STUART

RUNS ON A 4000 SERIES PET

"Welcome captain. You are now in charge of the space fleet's newest most advanced battlecruiser. Your mission. should you accept it. is to pilot this craft into a tunnel on the enemy planet and destroy as many of their underground bases. ammunition and fuel dumps as possible . . ."

This is a version of arcade Scramble and all the rules of the video version apply. You gain extra fuel for your craft by bombing the fuel and ammunition dumps. Full instructions are included in the program.

To alter the program to run on a 3000 or 2000 series Pet the peek to find which key is being pressed must be changed. This is the peek 151 and the value is held in variable Q. The movement of the tunnels is held in B$, C$, D$, E$, F$, and G$.

IN 16K

```
1 PRINT"⬛"
10 POKE59467,16:POKE59466,7
:P=59464:POKEP,0
15 DIMS$(10):DIMS(10)
16 FOR X=1 TO 10:S(X)=0:NEXTX
20 DIME(10)
30 E(1)=33230
31 E(2)=33189
32 E(3)=33145
34 E(4)=33150
35 E(5)=33179
36 E(6)=33262
37 E(7)=33303
37 E(6)=33262
38 E(8)=33197
39 E(9)=33233
40 E(0)=33151
90 A$="":B$="":C$="":D$="":E$=""
F$="":G$=""::FORF=1TO200:NEXTF
91 K=0
95 GOSUB 6000

100 PRINT"⬛⬛⬛⬛⬛⬛⬛⬛⬛⬛⬛⬛S.O.S. MISSION"
110 PRINT"⬛⬛⬛⬛⬛⬛⬛⬛⬛⬛⬛"
120 SH=33218:S3=33244:S5=0:S6=33204
130 PRINT"⬛◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼"
140 PRINT"⬛◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼ FUEL │ SCORE │ AMO │"
150 PRINT"⬛◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼"
160 PRINT"⬛◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼"
170 PRINT"⬛◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼"
300 FU=999:SC=0:AM=30
800 A$=""
805 AA$=""
810 B$=B$+""
815 B$=B$+""
816 B$=B$+""
820 C$=C$+""
825 C$=C$+""
827 C$=C$+""
830 D$=D$+""
835 D$=D$+""
840 E$=E$+""
845 E$=E$+""
847 E$=E$+""
850 F$=F$+""
855 F$=F$+""
857 F$=F$+"◼◼"
860 G$=G$+""
865 G$=G$+""
867 G$=G$+""
970 B$=A$+B$
971 C$=AA$+C$
972 D$=AA$+D$
973 E$=AA$+E$
974 F$=AA$+F$
975 G$=A$+G$
980 PRINT"⬛◼◼◼◼◼"
981 PRINT"⬛◼◼◼◼◼◼◼"
982 PRINT"⬛◼◼◼◼◼◼◼◼◼"
983 PRINT"⬛◼◼◼◼◼◼◼◼◼◼"
```

```
990 FOR ZX=1 TO LEN(B$)-42
991 IF S5=38 THEN  GOSUB 2700
992 S8=S7:S7=S6-S8:IF S8=38 THEN GOSUB2751
993 S4=S3-S5:S5=S4*2:S8=S8*2
994 LL=INT(RND(0)*3)-1 S7=S7+(LL*40)
995 POKES4,115:POKES4+1,246:POKES4+3,
32:POKES7+2,32
996 IF K>0 THEN POKES7,60:POKES7+1,92:
POKES7+2,32 POKES37,32
999 IF K>0 THEN POKES7,60:POKES7+1,92:
POKES7+2,32 POKES37,32
```

```
1000 B$=MID$(B$,2,LEN(B$))
1010 C$=MID$(C$,2,LEN(C$))
1020 D$=MID$(D$,2,LEN(D$))
1030 E$=MID$(E$,2,LEN(E$))
1040 F$=MID$(F$,2,LEN(F$))
1050 G$=MID$(G$,2,LEN(G$))
1110 PRINT"█████████"
1120 PRINTMID$(B$,1,39)
1130 PRINTMID$(C$,1,39)
1140 PRINTMID$(D$,1,39)
1145 PRINT"██"
1150 PRINTMID$(E$,1,39)
1160 PRINTMID$(F$,1,39)
1170 PRINTMID$(G$,1,39)
```

```
1180 A1=PEEK(SH):A2=PEEK(SH+1):A3=PEEK(SH+2)
1300 POKESH,108:POKESH+1,111:POKESH+2,100:POKESH+3,32
1310 POKEP,210:POKEP,180:POKEP,240:POKEP,0:S2=SH
1320 IF B>1 THEN SH=SH-1:B=B-1
1350 IF A1=102 OR A1=83 OR A1=115 OR A1=246 THEN 3000
1350 IF A1=102 OR A1=83 ORA1=115 OR A1=246 THEN 3000
1360 IF A2=102 OR A2=83 OR A2=65 ORA2=115 OR A2=246 THEN 3000
1370 IF A3=102 OR A3=83 OR A3=115 ORA3=115 OR A3=246 THEN 3000
1380 IF A1=86 OR A2=86 OR A3=86 THEN 3000
1390 IF A1=60 OR A2=60 OR A3=60 THEN 3000
1400 PRINT"████████████████████████████████+"
1410 PRINT"████████████████████████████████"FU
1420 PRINT"████████████████████████████████"AM
1430 PRINT"████████████████████████████████"SC
```

```
1440 POKEE(INT(RND(0)*10)+1),86
1450 POKEE(INT(RND(0)*10)+1),32
1460 POKES9,32:POKES9+1,32
1500 O=PEEK(151)
1510 IF O=50 THEN SH=SH-40:GOSUB2100
1520 IF O=18 THEN SH=SH+40:GOSUB2100
1530 IF O=41 THEN SH=SH+2:GOSUB2100 B=B+2
1540 IF B>22 THEN B=B-1:SH=SH-1
1550 IF O=48 THEN PP=1:GOSUB2200
1560 IF O=32 THEN PP=1:GOSUB2400
```

```
1600 FU=FU-5
1610 IF FU<-5 THEN 3000
1999 SC=SC+1
2000 NEXTZX
2005 A$=""  AA$=""
2006 K=K+1
2010 GOTO810
2100 POKES2,32:POKES2+1,32:POKES2+2,32:POKES2+3,32
2110 A1=PEEK(SH):A2=PEEK(SH+1):POKESH+2,100
2210 POKESH,108:POKESH+1,111:POKESH+2,32
2220 RETURN
2300 IF AM<1 THEN RETURN
2301 AM=AM-1
2305 FOR Z=S2+4 TO S2+10
2310 IF PEEK(Z)=102 PP=1:GOTO2390
2311 IF PEEK(Z)=83 THEN 2800
2312 IF PEEK(Z)=65 THEN 2900
2313 IF PEEK(Z)=115 THEN 3400
2314 IF PEEK(Z)=129 THEN 3300
2315 IF PEEK(Z)=134 THEN 3400
2316 IF PP=1 THEN 2390
2320 POKEZ,46:POKEP,140:POKEP,142
2330 POKEZ,46:POKEP,190:POKEP,200
2340 POKEP,0:POKEZ,32
2390 NEXTZ:RETURN
2400 AM=AM-1:IF AM<0 THEN RETURN
```

```
2410 Z=SH+3
2420 Z=Z+40
2421 IF PEEK(Z)=102 THEN 2500
2422 IF PEEK(Z)=83 THEN 2800
2423 IF PEEK(Z)=65 THEN 2900
2424 IF PEEK(Z)=115 THEN 3400
2425 IF PEEK(Z)=134 THEN 3300
2430 POKEZ,81:POKEP,100
2435 FORZZ=1TO4:POKEP,200:POKEP,180:POKEP,110:NEXTZZ ▶▶
```

30

```
2440 POKEP,0:FORZZ=1TO20:NEXTZZ:POKEP,32
2490 GOTO 2420
2500 RETURN
2700 POKES4,32:POKES4+1,32:POKES4+2,32:POKES4+3,32:POKES4+4,32
2710 S5=0:L=INT(RND(0)*3)
2720 S3=33164+(L*40)
2750 RETURN
2751 S8=0:L=INT(RND(0)*3)
2752 S6=33164+(L*40)
2753 POKES9,32:POKES9+1,32:POKES9+2,32:POKES9+3,32:POKES9+4,32
2755 RETURN
2800 FOR F=1 TO 25
2810 J=INT(RND(0)*4)
2820 POKEP,J*25:IF J=1 THEN POKEZ,86
2830 IF J=2 THEN POKEZ,214
2840 IF J=3 THEN POKEZ,32
2850 POKEP,J*20
2860 NEXTF:POKEP,0:SC=SC+1000:RETURN
2900 FOR X=1 TO 25
2910 J=INT(RND(0)*4)+1
2920 POKEP,J*10:IF J=1 THEN POKEZ,87
2930 IF J=2 THEN POKEZ,215
2940 IF J=3 THEN POKEZ,32
2950 POKEP,J*20+50:NEXTX:POKEP,0:SC=SC+500:RETURN
3000 POKES2+3,32
3005 FOR Z=1 TO 10
3010 POKEP,210:POKES2,32:POKES2+1,32:POKES2+2,160:POKEP,0
3015 POKEP,170:POKES2,32:POKES2+1,32:POKES2+2,102:POKEP,0
3020 POKEP,180:POKES2,32:POKES2+1,160:POKES2+2,32:POKEP,0
3025 POKEP,250:POKES2,32:POKES2+1,102:POKES2+2,32:POKEP,0
3030 POKEP,240:POKES2,160:POKES2+1,32:POKES2+2,32:POKEP,0
3035 POKEP,125:POKES2,102:POKES2+1,32:POKES2+2,32:POKEP,0
3040 NEXTZ
3050 POKES2,32:POKES2+1,32:POKES2+2,32
3100 FOR X=32768 TO33767STEP4
3110 Z=PEEK(X)
3120 IF Z<128 THENZ=Z+128:GOTO3140
3130 IF Z>128 THEN Z=Z-128
3140 POKEX,Z:NEXT
3250 FORF=1TO800:NEXTF:PRINT"◇"
3260 GOTO 4500
3300 FOR X=1 TO 50
3310 J=INT(RND(0)*4)
3320 IF J=1 THEN POKEZ,1:POKEP,210:POKEP,180
3330 IF J=3 THEN POKEZ,129:POKEP,170:POKEP,240
3340 NEXTX
3350 RM=RM+10
3390 RETURN
3400 FOR X=1 TO 50
3410 J=INT(RND(0)*4)
3420 IF J=1 THEN POKEZ,134:POKEP,150:POKEP,110
3430 IF J=3 THEN POKEZ,6:POKEP,110:POKEP,190
3440 NEXTX
3450 FU=FU+100:RETURN
1000 FORM=1 TO 10
4005 POKEZ,INT(RND(0)*250):POKEZ+1,32
4010 J=INT(RND(0)*4)
4020 POKEP,J*20:IF J=1THENPOKEZ-41,43
4030 IFJ=2THENPOKEZ-41,171
4040 IFJ=3THENPOKEZ-41,32
4060 POKEP,J*25:IFJ=1THENPOKEZ-39,43
4070 IFJ=2THENPOKEZ-39,171
4080 IFJ=3THENPOKEZ-39,32
4100 POKEP,J*15:IFJ=1THENPOKEZ+39,43
```

➡

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```
4110 IFJ=2THENPOKEZ+39,171
4120 IFJ=3THENPOKEZ+39,32
4130 POKEZ,J*10:IFJ=1THENPOKEZ+41,43
4150 IFJ=2THENPOKEZ+41,171
4160 IFJ=3THENPOKEZ+41,32
4170 NEXTX:POKEP,0
4180 POKEZ-39,32:POKEZ-41,32:POKEZ+41,32:POKEZ+39,32:POKEZ,32
4190 S5=0:L=INT(RND(0)*3)
4200 S3=33164+(L*40):SC=SC+250
4210 RETURN
4500 REM ****** END ******
4501 GETN$:PRINT"█"N$:IF N$<>"" THEN 4501
4510 PRINT"█"
4520 PRINT"▓▓▓▓▓▓▓▓▓▓▓▓▓GAME OVER"
4530 PRINT"▓▓▓▓▓▓▓▓▓▓▓▓▓"
4540 PRINT"▓▓▓▓▓▓▓▓▓▓▓▓▓YOU SCORED "SC
4550 FORX=1TO10:IFSC>S(X)THEN4570
4560 NEXTX:GOTO4700
4570 PRINT"▓▓▓▓▓▓▓▓▓▓▓▓▓PLEASE ENTER YOUR NAME FOR THE "
4580 PRINT"▓▓▓▓▓▓▓▓▓▓▓▓▓SCORE-TABLE."
4590 PRINT"█
4600 INPUTS$(X):S(X)=SC
4610 IF LEN(S$(X))>12 THEN 4570
4700 FOR F=1 TO 800:NEXTF:PRINT"█"
4710 PRINT"▓▓▓▓▓▓▓▓▓YOU JUST SCORED"SC
4720 PRINT"█▓"
4730 FORX=1TO10
4740 PRINT"▓▓▓▓▓▓▓▓▓"S(X)"    "S$(X)
4750 POKEP,X*20
4760 FOR Z=1 TO 80:NEXTZ
4800 NEXTX
4805 POKEP,0
4810 PRINT"█▓▓▓▓▓▓▓▓▓▓▓▓PRESS RETURN)"
4820 IF PEEK(151)<>27 THEN 4820
4900 GOTO90
5000 END
5000 REM ******** START ******
5001 GETN#
5005 GOTO 7010
5010 RESTORE:PRINT"▓":POKE59458,100
5015 PRINT"▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓"
5020 READZ#:READZZ:POKEP,ZZ
5025 GETN#:IFN#<>"" THEN 7500
5030 IF Z#="+" THEN 6980
5050 PRINTZ#
5060 PRINT
5100 FOR X=1 TO 20:POKEP,ZZ:POKEP,ZZ+10:NEXTX
5110 FOR X=1 TO 10:POKEP,ZZ+10:POKEP,ZZ-10:NEXTX
5120 POKEP,0:FORX=1TO500:NEXTX
5200 GOTO 5020
6980 POKEP,0:POKE59458,30
6990 POKE59458,30
7000 GOTO6000
7010 PRINT"▓":POKE59458,100:FORZ=1TO250:NEXTZ
7015 FOR X=1 TO 24
7017 GETN#:IFN#<>"" THEN 7500
7020 PRINTTAB(10)"S.O.S. MISSION ▓":NEXTZ:POKEP,0
7030 FOR Z=1 TO 100 STEP11:POKEP,Z:NEXTZ:POKEP,0
7040 FOR Z=1 TO 40:NEXTZ
7050 PRINTTAB(10)" S.O.S. MISSION▓"
7060 FOR Z=100 TO 1 STEP-11:POKEP,Z:NEXTZ:POKEP,0
```

32

```
7070 FOR Z=1 TO 40:NEXTZ
7100 PRINTTAB(11)" S.O.S. MISSION "T"
7110 FOR Z=10 TO 200 STEP-14:POKEP,Z:NEXTZ:POKEP,0
7120 FOR Z=1 TO 60:NEXTZ
7125 GETN$:IFN$<>"" THEN 7500
7150 PRINTTAB(11)" S.O.S. MISSION "T"
7160 FOR Z=10 TO 200 STEP-14:POKEP,Z:NEXTZ:POKEP,0
7170 FOR Z=1 TO 40:NEXTZ
7180 PRINTTAB(10)" S.O.S. MISSION "T"
7190 FOR Z=100 TO 1 STEP-11:POKEP,Z:NEXTZ:POKEP,0
7200 FOR Z=1 TO 40:NEXTZ
7210 PRINTTAB(10)"S.O.S. MISSION "T"
7220 FOR Z=1 TO 100 STEP11:POKEP,Z:NEXTZ:POKEP,0
7230 FOR Z=1 TO 40:NEXTZ
7240 PRINTTAB(10)"
7300 NEXTX
7400 GOTO 6010
7500 POKE59458,30:PRINT"◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼◼PRESS SPACE":POKEP,0
7510 GET N$:IF N$<>" " THEN 7510
7520 PRINT"T":RETURN
9000 DATA"          S.O.S. MISSION.",210
9010 DATA"      ",190
9015 DATA"    (C) BY NIGEL STUART 29:8:1982.",180
9020 DATA"",170
9030 DATA"      WELCOME CAPTAIN YOU ARE NOW PLACED",150
9040 DATA"    IN CHARGE OF OUR LATEST SPACE-CRAFT.",180
9050 DATA"    YOUR MISSION IS TO ENTER A TUNNEL",220
9060 DATA"    ON AN ALIEN PLANET AND DISTROY",150
9090 DATA"    AS MANY OF THERE UNDERGROUND",130
9100 DATA"    BASES, AMO DUMPS AND FUEL DUMPS ",240
9110 DATA"    AS YOU CAN BEFORE YOU RUN OUT OF FUEL.",240
9120 DATA"",100
9130 DATA"    YOU MAY GAIN ▩EXTRA◼ FUEL AND AMO BY",190
9140 DATA"    BOMBING OR SHOOTING AMO AND FUEL DUMPS.",210
9150 DATA"    THESE ARE SHOWN AS ▩▬◼ AND ▩▬.",80
9160 DATA"",50
9170 DATA"    THE CONTROLS FOR THE SPACE-CRAFT",80
9180 DATA"    ARE AS FOLLOWS :-",170
9190 DATA"     ",200
9200 DATA" 8 TO MOVE UP.",230
9210 DATA" 2 TO MOVE DOWN.",210
9220 DATA" 6 TO MOVE FORWARD.",190
9230 DATA"",170
9240 DATA" A TO FIRE FORWARD.",150
9250 DATA" Z TO DROP A BOMB.",110
9260 DATA"",150
9270 DATA"    -------------------------",180
9280 DATA"   POINTS AWARDED FOR HITTING ",200
9290 DATA" ♠ = 500",90
9300 DATA" ♥ = 1000",80
9310 DATA" ♣▬ =250",90
9320 DATA" YOU CAN NOT HIT ◁!",80
9330 DATA" ▩▬◼ = 10 UNITS OF AMO",90
9340 DATA" ▩▬ = 100 UNITS OF FUEL",80
9350 DATA"    -------------------------",180
9360 DATA"",150
9370 DATA"    GOOD LUCK!! ",200
9380 DATA"    YOU WILLNOT BE ABLE TO RETURN BECAUSE",190
9390 DATA"    YOU WILL BE BLOWN UP.",210
9400 DATA"    BUT TRY TO GET AS FAR AS YOU CAN.",220
9410 DATA"    WE ARE COUNTING ON YOU.....",230
9420 DATA"",240
9430 DATA"",210
9440 DATA"",180
9450 DATA"",150
9460 DATA"",110
9470 DATA"",50
9480 DATA"",50
9490 DATA"",20
9500 DATA"",245
9510 DATA"",245
9520 DATA"",245
9530 DATA"",10
9999 DATA"T",0
```

33

COPY

```
1 REM by neil devlin SEPT1982
2P.'$12;?WE1=0;?W@000=32;P.''''
$P.''                NEIL DEVLIN   "COP$"''
4F.D=1TO90.WAIT.N.
6?WE1=02;?W@000=32
8?WE1=0;P.''     ≠≠ COPY ≠≠
9?WE1=0;P.''REPEAT WHAT THE COMPUTER FLASHES'
P.''     BY PRESSING NUMBERS 1 TO 4.'
9%H.''''    INPUT''   ''1-FAST  SLOW-2 ''0
10IF (0C1)(0C2)G.3
11IF D=1 V=10;G.13
12D=20
130IN@047
14.H.?W@000#32
15 P.&21;0IN RR1,P-1;L=≠FFE2
16E. RR0 JSR LSTR@000$R;JP.R.#6
17P=&1;G.≠C4
18F.D=0T047
19WAIT.N.15;1FR=2 G.29
20D=0W=H.
20RND=M.N.
21CLEAR&4
22G@S.4;COLOUR$C
23G@S.58;F.D=1T020&140?R;WAIT.N.
24G.20,45,45
25E=E+1;B=0;C=0
27IFF=0 G@S.8;E=0;E=0;F=0;F.D=1TO65;WAIT.H.;G.24
29E.
30&LINK H£8
31?W@052)(?W@0C45)G.4
32IF?W@040=49 I=1;J1;X=10;COLOUR1
33IF?W@040=50 I=1;J=X=30;COLOUR1
34IF?W@040=51 I=1;X=10;COLOUR1
35IF?W@050=52 I=1;J=X=30;COLOUR1
36B=0;C=0;G@S.59;IFB(1<1)XJ.G.68
37IFE=1 E=E;COLOUR0.G@S.58;R.
39REM DRAW SQUARE
40F.D=1TO3
41?W@X=B.75;WAIT;DRAW X+B.90
```

```
42B=B+1;H.IF C=1 G@S.55
43F.D=1TO G@S.55;R.
44IFC=0;COLOUR0;B=0;C=1;G.39;R.
45IF BBE=1 X=10;COLOUR1;R.
46IF BBE=2 X=40;COLOUR1;R.
47IF BBE=3 X=70;COLOUR1;R.
48IF BBE=4 X=90;COLOUR1;R.
49E.
56REM DRAW NUMBERS
51MOVE11.60;DRAW93.65
52MOVE43.158;DRAW49.62;DRAW42.62;DRAW73.64
53MOVE70.60;DRAW73.60;DRAW73.62;DRAW73.62;DRAW73.63
54MOVE103.62;DRAW100.62;DRAW100.63;DRAW102.60;DRAW98.63
55P.≠7.R.
56REM DRAW 'YOUR GO'
58MOVE35.158;DRAW49.158;DRAW39.158;MOVE39.158;DRAW35.154
59MOVE43.158;DRAW44.158;DRAW44.153;DRAW40.153;DRAW43.158
60MOVE49.158;DRAW45.158;DRAW45.158;DRAW49.158
61MOVE51.159;DRAW51.158;DRAW53.158;DRAW53.158;DRAW51.158
62MOVE59.154;DRAW55.154;DRAW55.158;DRAW55.154;DRAW59.154
63MOVE63.158;DRAW59.158;DRAW59.158;DRAW63.158
64MOVE78.158;DRAW75.158;DRAW74.157;DRAW71.158;DRAW75.158
65MOVE77.158;DRAW78.158;DRAW77.158;DRAW75.158
66MOVE92.158;DRAW89.158;DRAW82.158;MOVE92.158;DRAW88.158
67R.
68P.≠12;?WE1=0;?W@000=32
69P.''              TUT-TUT''      WRONG CHOICE'
70IH.''''''  ANOTHER GAME (1-NO YES-2)''2
72P.≠12;?WE1=0;?W@000=32;P.'''''''  BYE-COWARD'
73L.73
74P.≠12;?WE1=0;?W@000=32;P.'''''  O.K I'LL GIVE YOU ANOTHER CHANCE'
75?W@000=32;G.9
77C COLOUR
78MOVE56.190;DRAW54.190;DRAW58.186;MOVE56.186;
79MOVE56.190;DRAW54.190;DRAW58.186;MOVE58.190;
80MOVE62.186;DRAW60.188;DRAW84.190;DRAW54.190;DRAW56.190
81MOVE66.190;DRAW60.188;DRAW58.190;MOVE66.190;DRAW58.186
82DRAW66.186;R.
```

How good are your powers of concentration and memory?

Not very good, then let Copy hone them to a razor sharpness as the Atom displays in hi-res graphics an ever increasing sequence of numbers for you to remember. One wrong one and you have to start all over again from scratch.

For those of you thinking you are superior there is a hard mode designed to take the smirk off your face and bring you back to reality. Based upon the Simon game, Copy is written for an expanded Atom.

COPY

BY NEIL DEVLIN

RUNS ON AN ATOM IN 12K

```
10 GO SUB 620
15 REM MAIN LOOP
20 FOR j=1 TO 20
30 IF 9>1 THEN GO TO 40
35 PAPER 3; FLASH 1;  Made
=1 TO 5: BEEP 1,30; NEXT J: PAU
SE 200
40 LET N=0
45 REM SET UP ANTIMATTER
50 FOR j=1 TO 20+1,INT
(RND*30)+1; INT (RND*30)+1; INK 5; "@"
75 REM SET UP PLAYER & GHOSTS
100 LET a=INT (RND*21)+1
105 LET b=INT (RND*31)+1
108 DIM b (9,2)
110 FOR j=1 to 9
120 LET b (j,1)=INT (RND*21)+1
130 LET b (j,2)=INT (RND*31)+1
150 NEXT J
160 LET c=9
170 GO SUB 420
180 PRINT AT 0,0; PAPER 2;" "
190 PAUSE 0
195 REM MOVEMENT LOOP
200 FOR i=1 TO 3
210 LET a=a
225 REM PLAYER MOVEMENT
230 LET a=a+(INKEYS="8" AND a(2
1)-(INKEYS="7" AND a>1)
240 LET b=b+(INKEYS="8" AND b(3
1)-(INKEYS="5" AND b>1)
245 REM GHOST MOVEMENT
```

GHOSTS

How long can you evade the nasty little ghosts that pursue relentlessly around the screen? Your only chance is to force the ghosts to step onto anti-matter spots.

First there will be one ghost after you and when he has been disposed of two more will appear to carry on the evil job. When the two have gone three will appear, then four, five...

Watch out then you do not get caught by them or step onto an anti-matter spot or you will come to a nasty end!

This program uses all three of the Spectrum's best requisites - sound, colour, and user-defined graphics - to make up an exciting arcade type game.

When run the computer sets up the screen and waits for you to press a key before starting. Your little man is moved by the cursor keys.

BY IAN McATAMNEY

RUNS ON A SPECTRUM IN 16K

```
250 FOR J=1 TO 9
255 IF J<9 THEN GO TO 370
260 IF J=9 THEN NEXT J
270 IF b(J,1) THEN NEXT J
280 IF b(J,1) THEN GO TO 340
290 LET b(J,1)=a(J,1): LET b(J,
310 IF J>2 THEN GO TO 340
320 LET a(J,1)=a(J,1)+(a(J,1)<b
)a(J,2)=a(J,2)+(a(J,2)<b
330 LET a(J,2)=a(J,2)+(a(J,2)<b
339 IF ATTR (a(J,1),a(J,2)) THE
EEP .05,45: LET
350 IF a(J,1) AND a(J,2)=b TH
EN GO TO 370
360 NEXT J: NEXT J: NEXT J
370 IF ATTR (a,b)=13 THEN GO TO
540 GO SUB 420
400 NEXT J
410 GO TO 200
420 REM PRINT SCREEN
425 PRINT c,d;"    ";AT a,b;INK
430 BEEP .02,20: PAPER 2;
      Hosts left: ";9-n
450 FOR J=1 TO 9
455 IF J=9 THEN NEXT J
470 IF ATTR (a(J,1),a(J,2)) THE
480 IF ATTR (a(J,1),a(J,2)) THE
490 PRINT AT b(J,1),b(J,2); INK
490 PRINT AT b(J,1),b(J,2); INK
```

```
500 NEXT J
510 RETURN
520 PAPER 0 : INK 7: CLS : BORDE
R 0
530 RETURN
535 REM END GAME
540 PRINT AT a,b; FL
545 PRINT "    ";AT a,b; INK
550 PRINT "  fool, you went onto
      an
      A mine": BEEP .05,45
560 BEEP .1,20
570 PAUSE 0 : PAUSE 0 : RUN
580 PRINT AT b(J,1),b(J,2); INK
590 PRINT AT a,b; Got you this t
      ": FLASH 1;
      FLASH 1
600 BEEP .2,-45 : RUN
620 PAUSE 0 : PAUSE 0 : RUN
630 REM USER-DEFINED GRAPHICS
640 FOR J=0 TO 7: READ P: POKE
USR "a"+J,VAL ("BIN "+STR$ P)
650 FOR J=0 TO 7: READ P: POKE
USR "b"+J,VAL ("BIN "+STR$ P)
660 FOR J=0 TO 7: READ P: POKE
USR "c"+J,VAL ("BIN "+STR$ P)
670 RETURN
680 DATA 10000,11000,10000,111
11000,10000,11000,10000
690 DATA 10000,10010,10010,10001
100010,10011,10011,11000
1000,10000,1000,10001,10000
10011,11111,11111,11111
110,1111,1111,11110,1000
```

```
1 PRINT"
5 DATA 53,53,53,53,53,53,53,53,53
10 DATA 53269,53413,53536,53610
15 DATA 53268,53424,53541,53619
20 DIM CL(2,4):FORI=1TO2:FORJ=1TO4:READCL(I,J)
:NEXT J,I
25 DIM D(20)
26 D=6:2
30 FORI=1TO20:TV=RND(1):NEXT
35 LI=6+INT(RND(1)*5):DR
=INT(RND(1)*4)+1:X=LI:Y=LJ
40 DIM DM(4):FORI=1TO4:READDM(I):NEXT
50 DIM DL(2,2):DL(1,1)=119:DL(1,2)=118:DL(2,1)=
118:DL(2,2)=119
55 DIM DR(2):FORI=1TO2:READDR(I):NEXT
60 DATA 3,5,5,7
70 DATA 21,45,7,14,10,10,2,6,14,6
72 DATA 21,14,5,10,10,15,21,21,21
73 DATA 7,35,35,10,10,6,15,10,15,21
74 DATA 21,35,10,10,6,21,14,10,10,15
75 DATA 35,35,10,10,6,21,14,10,15,21
76 DATA 70,70,10,10,10,15,21,21,14
78 DATA 35,70,10,10,10,3,42,7,10,30
80 DATA 35,21,6,70,15,21,10,70,6
81 DATA 35,70,15,35,10,10,5,5,10,15
82 DATA 42,14,10,10,15,10,10,6
83 DATA 21,45,7,14,10,10,15,21,21
84 DATA 21,14,5,10,10,15,5,6,21,21
88 DATA 14,6,105,21,35,15,10,15
85 DATA 35,35,14,6,5,14,6,14,10,10
87 DATA 14,10,5,6,14,6,14,10,10,15
90 DATA 14,6,5,21,21,35,35,10,6
91 DATA 21,105,21,21,35,35,10,6
92 DATA 35,35,15,35,10,10,5,5,10,15
93 DATA 45,7,14,2,21,21,14,2,15,21,35,15
94 DATA 7,2,3,21,21,21,14,5,14,6
95 DATA 21,21,105,21,21,21,35,15
96 DATA 35,35,14,6,5,14,6,14,10,10
97 DATA 35,35,10,10,5,10,10,6,2,6
98 DATA 42,70,10,2,10,6,21,42,35,15
99 DATA 21,6,21,35,15,21,10,14,15
100 DATA 105,70,10,105,35,5,10,10,70,15
105 DATA 70,15,105,35,15,10,10,30,70,15
70 PRINT"
130 REM == INSTRUCTIONS ==
131 PRINT"
132 PRINT"     3  -  D
133 PRINT"
```

3D MAZE

BY MATTHEW BLAKSTAD

RUNS ON AN MZ80K IN 7K

Baffled, bothered and bewildered? No? Well you will be after trying to find your way out of 3D-Maze!

You'll find yourself in an impressive graphic representation of a mindbending maze once you've programmed in all the twists and turns. All you have to do is escape.

The program enables you to move left, right and forwards, and even to execute a neat little 180 degree "flip" as you attempt to work out which way the exit is.

When the elusive exit is in sight a letter 'E' appears on the screen. A musical jingle greets your successful escape and the computer displays the time it took you to get out of this impossible maze. See you soon — we Variables/arrays

CL(2,4): corner location on screen of walls. TV: temporary variable. X, LJ: co-ordinates of player. TV, TJ: temporary co-ordinates for

printout. SI, SJ: co-ordinate for finding side location. DR: direction in which player is facing. CL (2): co-ordinates for printout at end of game. DW (4): depth of wall for each distance. DL (2): codes of diagonal line graphics. VL (2): codes of vertical line graphics.

DR (4): prime number for testing the presence of a wall. S: horizontal space string. J&J: loop variables. (also X). AS: temporary string variable. MS (10,10):number of each cell for testing for the presence of a wall. MZ: choice of maze. TI$: MZ-80K time string. CA: advancement of cell from (TI,TJ). SD: side being tested for.

OV: other temporary variable. TN: direction of turn/correct input test. PP: position of poke (location). CL: left hand corner for facing wall. C2: right hand corner for facing wall. WH: wall height for facing wall. DW: wall depths for walls in adjacent cells.

35

```
134 PRINT"           |     |           "
135 PRINT"           |     |           "
136 PRINT"           |     |           "
137 PRINT"           |     |           "
138 PRINT"           |     |           "
139 PRINT"           |     |           "
140 PRINT"           |     |           "
141 PRINT"           |     |           "
142 PRINT"           |     |           "
143 PRINT"           |     |           "
144 PRINT"         |  MAZE  |          "
145 PRINT"           |     |           "
146 PRINT"           |     |           "
147 PRINT"           |     |           "
148 PRINT"           |     |           "
149 PRINT"           |     |           "
150 TEMPO7:FORJ=1TO5:FORI=1TOX:MUSIC"D@_E0"
155 NEXTJ.
160 PRINTS$#:PRINTS$#:"Find your way"
161 PRINTS$#:"through a"
162 PRINTS$#:"perspective view"
163 PRINTS$#:"of the maze. Try"
164 PRINTS$#:"notes using the"
165 PRINTS$#:"commands to"
166 PRINTS$#:TH.B. The cell"
167 PRINTS$#:"nearest to you"
168 PRINTS$#:"is the one"
169 REM == which you are
170 PRINTS$#:in."
180 PRINT:PRINT:PRINTS$#:"PRESS ANY KEY"
190 GET A$:IFA$=""THEN190
200 PRINTS$#:"SELECT MAZE (1-3)"
260 GET A$:IF(VAL(A$)=0)+(VAL(A$)>3)THEN260
265 DIMM$(5,10):FORI=1TOUAL(A$):FORI=1TO10:
FORJ=1TO10:READMS(I,J):NEXTI,J:X
280 N$="00"+UAL(CA)-2*(5-CA)>1
290 POKE53555,0
295 J$="000000":I
296 REM == DISPLAY LOOP ==
300 TI=1,I:TH,I:FORCA=1TO4
309 REM == LEFT & RIGHT WALLS ==
310 FORSD=1TO2
320 OU=DR*(3-2*SD)+IFOU=0THENOU=4
325 IFOU=5THENOU=1
330 TU=MS(TI,TJ)/DR(OU)
335 FORI=CL(SD,CA)TOCL(SD,CA)+(43-2*SD)*(
CA)STEP(43-2*SD)
345 IFCA=4THENCL(SD,CA)=CL(SD,CA)+40:GOTO360
347 IFCA=4THENCL=CL(SD,CA)+40:GOTO360
350 TU=I+(SD*2-3)>0THENPOKEI,VL(SD)THEN2+
(4-CA)+3:STEP40:POKEI,VL(SD)STEP40
360 TU=1FORI=TUTOTU+40+(4-CA)*RSTEP(
372*SD)STEP2:POKEI,DL(SD):NEXTI
370 FORI=CL(SD,CA)+2-2*SD-7TOCL STEP(
(2+SD-3)+40*CA(CR)-40STEP40
380 POKEI,UL(SD):NEXTI
381 NEXTSD
385 IFCA=4THEN50
386 TU=MS(TI,TJ)/DR(DR)
400 IFTU=1THEN-DR(DR)
401 PRINT"TU=1=TU"THEN1000
410 IFDR=THENTI=TI-1:IFTI=0THENPOKEECL
(1,4):SI>0700
420 IFDR=2THENTJ=TJ+1
430 IFDR=3THENTI=TI+1
440 IFDR=4THENTJ=TJ-1
450 NEXTCA
700 POKE53555,555:PRINTS$#" Your move"
710 PRINTS$#"  ===== "
720 PRINTS$#:PRINTS$#:"L=Left  R=Right"
730 PRINTS$#:"F=Flip  M=Move"
740 PRINTS$#:PRINTS$#
750 GETA$:IFA$=""THEN750
760 PRINTS$#"     ":A$
770 IFA$="L"THENTH=1
780 IFA$="R"THENTH=2
790 IFA$="F"THENTH=3
800 IFA$="M"THEN850
810 IFTH=0THEN750
820 DR=DR+TH:IFDR>4THENDR=DR-4
830 IFDR>4THENDR=DR-4
840 TH=0:PRINT"□POKE59555,0:GOTO300
850 IFMS(LI,LJ)/DR=0THEN900
855 IFDR=1THENLI=LI-1:IFLI=0THEN900
860 IFDR=2THENLJ=LJ+1
870 IFDR=3THENLI=LI+1
880 IFDR=1THENLJ=LJ+1
890 GOTO200
900 FORI=1TO200:POKE4514,INT(RND(1)*50):USR
(68):NEXTI:USR(71)
910 PRINT"8"
920 ONMJGOSUB1100,1400,1620
930 PRINTS$#:"□□□□□□□□□"?S$#:"STARTING"
935 PRINTS$#:"CO-ORDS 1="
940 PRINT:PRINTS$#:("C1)I" ,"1CJ1")"
945 PP=%3207+40*CI+2*CJ
950 POKEPP,202
955 PRINT:PRINT:PRINTS$#:"Time:-":UAL(MID$
(TI#,3,2))":" nns.
960 PRINT:PRINT:PRINTS$#:"□ANOTHER GAME?"
965 GET A$:IF A$=""THEN965
970 IFA$="Y"THENPRINT"YES":FORI=1TO500:NEXT:
RESTORE:GOTO1
990 PRINT"NO"?END
999 REM == FACING WALL DISPLAY ==
1000 C1=CL(1,CA)+(5-CA)*41:C2=CL(2,CA)+(5-CA)
*391:WHEN(CA<CR)-2*(5-CA)>1
1005 FORI=1TOC2STEP40:POKEI+40,61:NEXTI
1010 FORI=0TOWH:POKEI+40+I,UL(2):POKEC2+40+
I,UL(1):NEXT
1020 FOR I=CL(1,CA)+40+WH*TOC2+40+WH:POKEI+40,112:NEXT
1030 GOTO700
1040 REM == SPACE TO SIDE ==
1050 IFTI=1SJ=TJ
1060 IFOU=1THENSI=SI-1:IFSI=0THEN381
1070 IFOU=2THENSJ=SJ+1
1080 IFOU=3THENSI=SI+1
1090 IFOU=4THENSJ=SJ-1
1100 IF(SI(TU)+(TU)=0)THENGOTO381
1110 IFINT(TU)<>TU THEN381
1100 PRINT"█ ██ ████ ██ █"
1110 PRINT"█ ██ ████ ██ █"
1120 PRINT"█ ██ ████ ██ █"
1130 PRINT"█ ██ ████ ██ █"
1140 PRINT"█ ██ ████ ██ █"
1150 PRINT"█ ██ ████ ██ █"
1160 PRINT"█ ██ ████ ██ █"
1170 PRINT"█ ██ ████ ██ █"
1180 PRINT"█ ██ ████ ██ █"
1190 PRINT"█ ██ ████ ██ █"
1200 PRINT"█ ██ ████ ██ █"
1210 PRINT"█ ██ ████ ██ █"
1220 PRINT"█ ██ ████ ██ █"
1230 PRINT"█ ██ ████ ██ █"
1240 PRINT"█ ██ ████ ██ █"
1250 PRINT"█ ██ ████ ██ █"
1260 RETURN
1290 PRINT"█ ██ ████ ██ █"
1300 PRINT"█ ██ ████ ██ █"
1310 PRINT"█ ██ ████ ██ █"
1320 PRINT"█ ██ ████ ██ █"
1330 PRINT"█ ██ ████ ██ █"
1340 PRINT"█ ██ ████ ██ █"
1350 PRINT"█ ██ ████ ██ █"
1360 RETURN
1370 PRINT"█ ██ ████ ██ █"
1380 PRINT"█ ██ ████ ██ █"
1390 PRINT"█ ██ ████ ██ █"
1400 PRINT"█ ██ ████ ██ █"
1410 PRINT"█ ██ ████ ██ █"
1420 PRINT"█ ██ ████ ██ █"
1430 PRINT"█ ██ ████ ██ █"
1440 PRINT"█ ██ ████ ██ █"
1450 PRINT"█ ██ ████ ██ █"
1460 PRINT"█ ██ ████ ██ █"
1470 PRINT"█ ██ ████ ██ █"
1480 PRINT"█ ██ ████ ██ █"
1490 PRINT"█ ██ ████ ██ █"
1500 PRINT"█ ██ ████ ██ █"
1510 PRINT"█ ██ ████ ██ █"
1520 RETURN
1530 PRINT"█ ██ ████ ██ █"
1540 PRINT"█ ██ ████ ██ █"
1550 PRINT"█ ██ ████ ██ █"
1560 PRINT"█ ██ ████ ██ █"
1570 PRINT"█ ██ ████ ██ █"
1580 PRINT"█ ██ ████ ██ █"
1590 PRINT"█ ██ ████ ██ █"
1600 RETURN
1610 PRINT"█ ██ ████ ██ █"
1620 PRINT"█ ██ ████ ██ █"
1630 PRINT"█ ██ ████ ██ █"
1640 PRINT"█ ██ ████ ██ █"
1650 PRINT"█ ██ ████ ██ █"
1660 PRINT"█ ██ ████ ██ █"
1670 RETURN
1680 PRINT"█ ██ ████ ██ █"
1690 PRINT"█ ██ ████ ██ █"
1700 PRINT"█ ██ ████ ██ █"
1710 PRINT"█ ██ ████ ██ █"
1720 PRINT"█ ██ ████ ██ █"
1730 PRINT"█ ██ ████ ██ █"
1740 PRINT"█ ██ ████ ██ █"
1750 PRINT"█ ██ ████ ██ █"
1760 PRINT"█ ██ ████ ██ █"
1770 PRINT"█ ██ ████ ██ █"
1780 PRINT"█ ██ ████ ██ █"
1790 PRINT"█ ██ ████ ██ █"
1800 PRINT"█ ██ ████ ██ █"
1810 PRINT"█ ██ ████ ██ █"
1820 RETURN
1830 RETURN
```

GRAPHICAL GOLF

BY IAN TURTLE

RUNS ON A ZX81 IN 8K

```
 10 REM 361438942063500540643 59
44264358416963400455051 32335574294
44755375418035055
 20 LET V=VAL "1"
 30 LET U=VAL "0"
 40 LET Y=VAL "1"
 50 PRINT TAB VAL "9";"GRAPHICA
L GOLF"
 60 PRINT
 70 PRINT TAB VAL "7";"(C) IAN T
URTLE,1981"
 80 PRINT
 90 PRINT "RANDOM OR NORMAL COU
RSE?-R/N"
100 PAUSE VAL "40000"
110 LET Z$=INKEY$
120 IF Z$="" AND Z$<>"N" THEN
GOTO VAL "80"
130 DIM L(VAL "18")
140 DIM P(VAL "18")
150 DIM D(VAL "18")
160 IF Z$="R" THEN GOTO VAL "28
0"
160 LET ZZ= "16513"
170 FOR A=U TO VAL "18"
180 LET (H) =U+V
190 LET L(H) =(H)+VAL "10"+PEEK
(ZZ)-VAL "28"
200 LET ZZ=ZZ+V
210 LET P(H) =PEEK (ZZ)-VAL "28"
220 NEXT H
260 PRINT  "COURSE NO?"
263 INPUT ZZ
265 LET ZZ=ZZ
270 FOR A=U TO VAL "18"
280 LET ZZ=ZZ+VAL "16"
290 LET L(H) =INT (RND+VAL "420"
279")+(L(H)VAL "499"
300 LET ZZ=ZZ+U+V
300 NEXT A
310 PRINT "PAR=";ZZ
310 FOR A=V TO VAL "18"
330 LET ZZ= "330"
350 LET P=U TO VAL "32"
350 FOR A=U TO VAL "32"
360 LET A$=A$+CHR$ VAL "8"
370 NEXT A
390 LET B$=Y
393 LET PB=Y
400 LET Y=Y
410 LET HP=Y
420 LET PP=Y
430 LET XX=Y
450 LET YY=Y
470 LET VV=Y
510 LET DF=Y
540 LET HS=Y
550 LET TG=Y
560 LET Z=Y
570 PRINT "HANDICAP?"
580 INPUT HP
585 RAND
595 CLS
595 LET DF=PEEK VAL "16396"+VAL
"16512"
595 LET A=PEEK VAL "16397"
600 FOR A=U TO VAL "18"
610 LET P$=PR+P(H)
620 LET SH=V
710 PRINT A$
720 NEXT A
730 PRINT "HOLE ";H;"  DIST ";L
(H);"  PAR ";P(H)
740 LET Y=U+VAL "3"+INT (RND+VA
L "13")
740 LET TG=U+P
750 FOR A=U TO L(H)VAL "20"-U
760 FOR B=-U+(RND).5) TO U+(RND
```

```
770 POKE (UP+B) +VAL "33";+A+DF,Y
780 NEXT A
790 LET U=U+(RND).5)+(RND).5)
800 LET UP=UP-(RND).5)"15")+(UP
(VAL "2")
810 NEXT A
820 LET HP=INT (L(H)/VAL "20")-
830 FOR A=-U+(RND).3) TO V+RND
).3)
850 FOR B=A-U-(RND).3) TO V+(RND
).3)
850 POKE (UP+B) +VAL "33"+HP+A+D
F,VAL "128"
860 NEXT B
870 NEXT A
880 LET UP=UP+VAL "33"+HP+DF,VAL
"149"
900 POKE DF+TG+VAL "3"+INT (RND+VA
L "149"
910 LET ZZ=UP+VAL "-3"+INT (RND+VA
185"
910 POKE DF+TG+VAL "3"-INT (RND+U
VAL "3"+U,VAL
185"
920 LET YY=DF+(UP+ZZ) VAL "33"
930 IF PEEK (YY) VAL "8" AND P
EEK (YY) (Y) THEN GOTO VAL "910"
940 POKE YY,VAL "52"
950 FOR A=U TO VAL (RND).4)
960 LET ZZ=VAL "-3"-INT (RND+VA
L "3"
970 LET XX=VAL "-3"+INT (RND+VA
L "3"
970 LET YY=DF+(UP+XX) VAL "33"+
HP+ZZ
990 IF PEEK (YY) VAL "8" AND P
EEK (YY) (Y) THEN GOTO VAL "950"
1000 POKE YY,VAL "52"
1010 NEXT A
1020 IF P(H) VAL "4" THEN GOTO V
AL "1040"
1030 LET HP=VAL "10"
```

So you think you're another Arnold Palmer do you? Well, this round of golf will sort the men out from the boys!

Graphical Golf is an 18-hole simulation of the real game. It has been made as realistic as possible, with many of the features of the real thing.

Initially, the computer asks you if you would like a random or a normal course. If you choose the normal course, you will get the lengths and pars of holes stored in the REM statement in line 10.

If you choose the random course, you have access to over 65 000 different courses by inputting a number between 1 and 65 000+ in reply to "COURSE NO?". If you want to play that course again sometime, simply input the same number in response to "COURSE NO?". Finally, you asked to input your handicap, else input number 24. If you play well enough, your handicap will be

reduced at the end of the round a golf hole.

From now on, you are on the course. If you have a ZX81, you will see the computer draw the hole, else, on the ZX80, the screen will simply go blank for 10 seconds or so. When the computer has finished, you will be presented with a graphical representation of a golf hole.

The computer will then ask you for your choice of club. You have 22 clubs, consisting of 4 woods, 1-9 irons and with their own percentage swing. Next you are asked to input an angle of shot. An input of '0' degrees means straight ahead. '90' straight up, etc.

You'll encounter all the hazards of a real course, bunkers, the rough, and even water traps.

The computer will print out a scorecard for each round you play — and maybe even reduce your handicap should your performance warrant it!

```
1040 FOR A=U TO VAL "4"+(RND),4)
1050 LET ZZ=HP+INT (RND)+UAL "4"
1060 FOR B=V TO VAL "4"
1070 LET ZZ=PB+UAL "33"+ZZ
1080 IF PEEK (YY) CVAL "52" THEN U
AL "110"
1090 POKE YY,UAL "52"
1100 GOTO UAL "1120"
1110 NEXT B
1120 NEXT A
1130 IF P(H)=UAL "5" THEN GOTO U
AL "1140"
1140 LET HP=UAL "17"
1140 FOR A=U TO VAL "4"+(RND),4)
1150 FOR B=V TO VAL "4"
1160 LET ZZ=HP+UAL (RND)+UAL "4")
1170 FOR B=V TO VAL "4"
1180 LET ZZ=PB+UAL "33"+ZZ
1180 IF PEEK (YY) CVAL "52" THEN U
AL "1230"
1190 LET HP=INT (RND)+UAL "4"
1200 POKE YY,UAL "52"
1210 GOTO UAL "1230"
1220 NEXT B
1230 NEXT A
1240 IF P(H)).25 THEN GOTO VAL "1
310"
1250 LET HP=INT (L(H)/UAL "40"
1260 FOR A=U TO VAL "4"
1270 POKE A+UAL "33"+DF,UAL
1280 LET HP=HP+(RND),5)-(RND),5)
1280 LET HP=HP+(HP(VAL "2")-(HP)
(H)/UAL "20"
1300 NEXT A
1310 LET HP=U
1320 LET PB=UAL "21";Y;"CLUB"
1330 LET VP=VG
1360 PRINT AT VAL "21";Y;"CLUB"
1370 INPUT CI
1370 IF CICU OR CICUAL "11" OR CI
CUAL "2" OR CICUAL "10 THEN GOTO V
AL "1360"
1375 LET HC=Y
1380 IF VAL "19" THEN GOTO VA
L "1410"
1410 LET PS=UAL "1450"
1420 GOTO UAL "1450"
PAGE SWING"38"50
1430 INPUT AT VAL "21";Y;"PERCEN
1440 IF PSCVAL "50" OR PSCVAL "1
00"  THEN GOTO UAL "1430"
1450 PRINT AT VAL "21";Y;"SHOT A
NGLE"
1460 INPUT AS
1470 IF ASCVAL "180" OR ASCVAL "
0" THEN GOTO UAL "1470"
1480 PRINT AT VAL "20";Y;B$
1485 LET AS=INT (AS/UAL "20")
1490 LET AS=UAL (AS+RND)+(UAL "22
"+HA) (RND)
1500 LET AS=(AS+PI)/UAL "100"
1510 LET SH=HS+UAL "100"
1520 IF CICVAL "20" THEN LET CI=
CI-UAL "10"
1530 IF CICVAL "10" THEN LET CI=
UAL "10"
1535 LET CI=VAL "16"-CI
1537 POKE UAL "28"+RH
1540 LET HS=INT ((CI(INA)+RC)+COS
(AS))/UAL "20")+.5)
1545 LET US=INT ((CI(INA)+RC)+SIN
(AS))/UAL "20")+.5)
1547 LET HC=U
1550 LET BP=DF+HS+(UP+US)+UAL "3
1560 IF HP+HS)UAL "32" OR HP+HS)
O OR UP+US)V OR UP+US)UAL "17"
THEN GOTO UAL "1670"
1590 LET PS=PEEK (BP)
1590 IF PSCVAL "3"
1600 LET BB=Y UAL "3"
1600 POKE BP,Y
1602 PAUSE VAL "60"
1603 PAUSE UAL "155"
1604 POKE BB,PS
1605 PAUSE UAL "50"
1606 NEXT YY
1610 IF YY=UAL "128" UAL "2000"
1410 THEN GOTO UAL "8" THEN GOTO
1620 IF YY=UAL "8" THEN GOTO VAL
"1750"

1530 IF YY=UAL "52" THEN GOTO VA
L "1830"
1640 PRINT AT UAL "20";Y;B$
1650 PRINT AT UAL "20";Y;"ON FAI
RWAY"
1660 GOTO UAL "1930"
1670 PRINT AT UAL "20";Y;B$
1680 PRINT AT UAL "20";Y;"OUT OF
BOUNDS-PENALTY 1 STROKE"
1690 LET SH=SH+U
1695 LET BP=DF
1700 PAUSE UAL "100"
1710 PRINT AT UAL "1340"
1720 PRINT AT UAL "20";Y;B$
1730 PRINT AT UAL "20";Y;"SPLASH
"
1740 INTER-PEN. 1 STROKE
1750 PRINT AT UAL "20";Y;B$
1755 IF RND), 4 THEN GOTO VAL "18
1760 IF YY=UAL "20" THEN
1770 PRINT AT UAL "20";Y;"IN HEA
VY ROUGH"
1780 LET RC=.6+RND/UAL "10"
1790 GOTO UAL "1930"
1800 PRINT AT UAL "20";Y;"IN LIG
HT ROUGH"
1810 LET RC=.8+RND/UAL "10"
1815 PRINT AT UAL "20";Y;B$
1820 GOTO UAL "1930"
1840 PRINT AT UAL "20";Y;"BUNKER
"
1848 LET ZZ=INT (RND+UAL "2")
1850 IF ZZ=U THEN PRINT "GOOD"
1860 IF ZZ=U THEN LET MC=UAL "24
"-INT (RND+UAL "2")
1870 IF ZZ=VAL "2" THEN LET AU=
INT (RND+UAL "2")
1890 IF ZZ=VAL "2" THEN PRINT "B
"
1900 IF ZZ=VAL "2" THEN LET MC=U
1910 IF ZZ=VAL "2" THEN LET HC=U
1910 LET RC=.7-ZZ/UAL "10"+RND/U
AL "2"
1915 LET RC=.7-ZZ/UAL "10"+RND/U
1920 PRINT " LIE,MAX.CLUB ";HC
1930 PAUSE UAL "100"
1940 LET HS=HP+HS
1950 LET US=UP+US
1960 PRINT AT UAL "1350"
2010 LET HP=HP+HS
2020 PRINT AT UAL "20";Y;B$
2020 PRINT AT UAL "20";Y;"ON THE
GREEN IN "
2030 PAUSE UAL "150"
2040 CLS
2050 PRINT TAB UAL "17"
2060 PRINT TAB UAL "17"
2070 FOR A=U TO UAL "2"
2080 PRINT TAB UAL "17"
2090 NEXT A
2100 PRINT TAB UAL "17"
2110 NEXT A

2150 POKE DF+UAL "52",UAL "128"+
2160 LET TG=INT (RND+UAL "410")=U)
2155 LET TG=INT (RND+UAL "158"+
U)-INT (RND+UAL "10")+UAL "5"
2170 LET TG=U+INT (RND+UAL "18")
2180 IF TG=UAL "2" THEN PRINT "S
LOW"
2190 IF TG=UAL "3" THEN PRINT "M
EDIUM"
2200 PRINT AT UAL "12",UAL "3"
"FROM PIN"
2220 PRINT AT UAL "12",UAL "3"
",FROM PIN"
2230 LET YY=ABS (HP+U-INT (L(H)/
UAL "2"
2240 LET BP=INT (YY+UAL "20"+RND
2250 PRINT AT UAL "20";Y;"ABS BP
2260 PRINT AT UAL "12",UAL "3"
2270 IF ABS BP=UAL "20" THEN GOTO
UAL "2460"
2280 IF YY=UAL "20"-INT (BP/UA
L "20")+U) THEN LET YY=U
2290 IF YY=UAL "32" THEN LET YY=U
2300 IF YY=U THEN LET YY=U
2310 LET YY=UU-YY+(YY+UAL "20")+U
UAL "21"
2320 POKE DF+YY=UAL "297"+YY,UAL "5
"
2330 PRINT AT UAL "13",Y;"PUTTIN
```

Left column listing:

```
9 STRENGTH?'(1-20)
2530 INPUT ZZ
2540 IF ZZ=V OR ZZ=VAL "20" THEN
GOTO VAL "2340"
2560 IF BP<V THEN LET XX=v
2570 IF BP>V THEN LET XX=-v
2580 POKE DF+VAL "297"+YY,VAL "9
2
2400 PAUSE VAL "50"
2410 FOR A=V TO ZZ
2420 LET B=BP+XX*(V+INT (RND*TG
)
2430 NEXT A
2440 LET SH=SH+V
2450 POKE DF+VAL "2256"
2460 POKE DF+VAL "317",VAL "52"
2470 PAUSE VAL "50"
2480 POKE DF+VAL "317",VAL "131"
2490 PAUSE VAL "100"
2500 CLS
2510 PRINT "YOU HOLED OUT IN ";S
H; SHOTS
2520 LET S(H)=SH
2530 LET ZZ=SH-P(H)
2540 IF ZZ=VAL "-3" THEN PRINT "
EXCELLANT-AN ALBERTROSS
2550 IF ZZ=VAL "-2" AND P(H)=VAL
"3" THEN PRINT "UNBELIEVABLE-A
HOLE IN
2560 IF ZZ=VAL "-2" THEN PRINT "
GREAT-AN EAGLE
2570 IF ZZ=VAL "-1" THEN PRINT "
A BIRDIE
2580 IF ZZ=Y THEN PRINT "WELL DO
NE-A PAR
2590 IF ZZ=Y THEN PRINT "HHHHMMM
2600 IF ZZ=Y THEN PRINT "KEEP YO
UR HEAD DOWN
2610 PRINT
2620 LET TS=TS+SH
2630 LET TS=TS-PR
2640 PRINT "YOU ARE NOW ";
2650 IF ZZ>Y THEN PRINT ABS ZZ;
2660 IF ZZ<Y THEN PRINT "LEVEL";
2670 IF ZZ>Y THEN PRINT ;" OVE
2680 PRINT " PAR(GROSS)"
2690 PRINT
2700 PRINT "PRESS ANY KE
2710 PAUSE VAL "40000"
2720 CLS
2730 PRINT H
2740 PRINT TAB VAL "12";"
2750 PRINT TAB VAL "3";"HOLE";TA
B VAL "11";"DIST";TAB VAL "19";"
PAR";TAB VAL "36";"SHOTS
2760 FOR H=V TO VAL "18"
2770 PRINT TAB VAL "4";H;TAB VAL
"12";L(H);TAB VAL "19";P(H);TAB
VAL "28";S(H)
2780 NEXT H
2790 PRINT "PRESS A ";TAB VAL "19
2";PRINT TAB VAL "19
2800 PAUSE VAL "40000"
2810 CLS
2820 PRINT "YOU TOOK ";TS;" SHOT
2830 PRINT "(NET ";TS-PR;")
2840 LET ZZ=TS-PR
2850 PRINT "YOU FINISHED ";
2860 IF ZZ>Y THEN PRINT ABS ZZ;"
UNDER"
2870 IF ZZ<Y THEN PRINT "LEVEL";
2880 IF ZZ>Y THEN PRINT ZZ;" OVE
2900 PRINT " PAR(NET)"
2910 IF HA>Y THEN PRINT
2920 IF ZZ=VAL "-2" THEN LET
2930 IF ZZ<-V THEN LET PD=-V
2940 IF PD>Y THEN LET PD=Y
2950 IF ABS PD>HA THEN LET PD=-H
A
2960 PRINT
2970 PRINT "AS A RESULT"
2980 IF PD>Y THEN GOTO VAL "3020
2990 PRINT "HANDICAP IS DOWN ";A
BS PD;" SHOTS", TO ";HA+PD
3000 STOP
3020 PRINT "YOUR HANDICAP STAYS AT
";HA;" SHOTS
3030 STOP
```

Vroom, vroom! Here they come — it's the duelling dodgems!

But these are not really like those old fairground favourites. There's more than a touch of motorway madness in this game.

Your BBC micro will set up a square-shaped game track for you, and two cars will appear. One red and one green. You are in control of the green car. The computer controls the red one.

The computer-car will proceed to rush around the track int he opposite direction to your red car and it's aim is extremely unfriendly. It wants to knock you off the road as quickly as possible. You must avoid the computer car.

IN 32K

```
10High=0
20MODE2:PROCINSTRUCT
30MODE2:PROCSETUP:REM LAST PIECE OF PROGRAM
SETS UP VARIOS COLOURS ETC.
40SC=0:ENVELOPE1,3,0,0,0,0,0,0,121,-10,-5,-2,
120,120
50ON ERROR MODE7:END
60VDU23,1,0101010;
70GOSUB150:GOSUB150
80PROCDRAW1:PROCFILLING
90PROCMOVE2
100IFYDX%=DY AND YA%=DX THEN GOTO1040
110PROCMOVE2
120IFYDX%=DY AND YA%=DX THEN GOTO1040
130GOTO90
150VDU23,0,238,68,255,68,238,0
160VDU23,251,24,90,126,90,24,90,126,90
170VDU23,126,255,255,255,255,255,255,255,255
180VDU=15;V6%=7;CAR8=CHR$251
190DY=2:V=2;CAR8=CHR$251
200M%=1:MY=0;M%=0;YA%=0
210RETURN
220DEFPROC2%
230COLOURbackcol:COLOURforecol
240CLS
250PRINT" SCORE!"
260PRINT"~~~~~~~~~~~~~~~
270PRINT"~~~~~~~~~~~~~~~
280PRINT"~~~~~~~~~~~~~~~
290PRINT"~~~~~~~~~~~~~~~
310PRINT"~~~~~~~~~~~~~~~
320PRINT"~~~~~~~~~~~~~~~
340PRINT"~~~~~~~~~~~~~~~
350PRINT"~~~~~~~~~~~~~~~
360PRINT"~~~~~~~~~~~~~~~
370PRINT"~~~~~~~~~~~~~~~
400PRINT"~~~~~~~~~~~~~~~
410PRINT"~~~~~~~~~~~~~~~
420PRINT"~~~~~~~~~~~~~~~
440PRINT"~~~~~~~~~~~~~~~
450PRINT"~~~~~~~~~~~~~~~
460PRINT"~~~~~~~~~~~~~~~
480PRINT"~~~~~~~~~~~~~~~
490PRINT"~~~~~~~~~~~~~~~
510PRINT"~~~~~~~~~~~~~~~
520PRINT"~~~~~~~~~~~~~~~
540ENDPROC
550PROCMOVE1
560A%=723&1M=0;Y=0
570PRINTTAB(YA%,YDX%)," ":IFA=0THEN610
```

```
580M*=(SGN(HM)<>0)-(SGN(VM)<>0))*2*((A=178)-(A=193))
5901F YA%+VM%+HM%+VM%&SGN(M):VD%+HM%&SGN(M):M)
M)(<>"" THEN YA%=YA%+VM%:YD%=YD%+HM%:IF FNREADCH(YA%-VM%M/2,YD%-HM%M/2)=,"THE
NPRINTTAB(YA%-VM%M/2,YD%-HM%M/2):" ":SC=SC+score:COLOURsccrol:PRINTTAB(8,0):SC
600REM
610REM MOVE AROUND THE MAZE
620TY=YD%+VM%:TX=YA%+HM%:A=FNREADCH(TX,TY)
630IFA="":THENSC=SC+score:COLOURsccrol:PRINTTAB(8,0):SC
640YD%=TY:" "AND A=" ":PROCCHNG
650YD%=YD%+VM%:YA%=YA%+HM%:PROCCHNG
660COLOURyourcol:PRINTTAB(YA%,YD%):CAR
670ENDPROC
680DEFPROCCHNG
690IFVM=1 AND HM=0 THENVM=0:HM=1:CAR=CHR$250:ENDPROC
700IFVM=0 AND HM=-1 THENVM=-1:HM=0:CAR=CHR$251:ENDPROC
710IFVM=-1 AND HM=0 THENVM=0:HM=-1:CAR=CHR$250:ENDPROC
720IFVM=0 AND HM=1 THENVM=1:HM=0:CAR=CHR$251:ENDPROC
730DEFFNREADCH(X,Y)
740LOCALA,LASTX,LASTY
750LASTX=POS:LASTY=VPOS
760VDU31,X,Y
770A%=135:C%USR(&FFF4) AND &FFFF
780C% DIV %100
790VDU31,LASTX,LASTY
800=CHR$(C)
810DEFPROCMOVE2
820TX=MX+DX:TY=MY+DY
830A%=FNREADCH(TX,TY)
840IF A$="" THEN PROCCHAN
850COLOURdotcol:PRINTTAB(DX,DY):" ":
860COLOURnewlane:PRINTTAB(TX,TY):CAR2:SOUND1,-8,50,1
870DX=TX:DY=TY:PROCCHNGLANE
880ENDPROC
890DEFPROCHAN
900IF MX=0 AND MY=1 THEN -1:MY=0:MX=0:CAR2=CHR$250:GOTO940
910IF MX=1 AND MY=0 THENMX=0:MY=0:CAR2=CHR$251:GOTO940
920IF MX=0 AND MY=-1 THENMX=1:MY=0:CAR2=CHR$250:GOTO940
930IF MX=-1 AND MY=0 THEN MX=0:MY=-1:CAR2=CHR$251:GOTO940
940TX=MX+DX:TY=MY+DY:ENDPROC
950DEFPROCCHNGLANE
960DI=RND(3)-2:IFDI=0THEN960
970A%=FNREADCH(DX+MX*DI,DY+MX*DI)
980IFA$=""THENENDPROC
990A%=FNREADCH(DX+MY*DI*2,DY+MX*DI*2)
1000IFA$=""THENENDPROC
1010COLOURdotcol:PRINTTAB(DX,DY):" ":
1020DX=DX+MX*DI*2
1030COLOURnewlane:PRINTTAB(DX,DY):CAR2:ENDPROC
1040REMHHIT
1050VDU23,240,0,0,0,24,24,0,0
1060VDU23,241,0,0,60,36,36,60,0,0
1070VDU23,242,0,126,66,66,66,66,126,0
1080VDU23,243,255,129,129,129,129,129,129,255
1090X=DX):Y=DY
1100FORT=1T045
1110MOVEX1:&COL0,endcol
1120MOVEX*64,1020-Y*32
1130IF T AND 1<>0 THENPRINTCHR$240:MOVEX*64,1020-Y*32
1140IF T AND 2<>0 THENPRINTCHR$241:MOVEX*64,1020-Y*32
1150IF T AND 4<>0 THENPRINTCHR$242:MOVEX*64,1020-Y*32
1160IF T AND 8<>0 THENPRINTCHR$243:MOVEX*64,1020-Y*32
1170VDU19:PRINTTAB(DX,DY):" ":SOUND1,1,255-T*255/45,1:NEXT
1180CLS:W=FX15,0
1190MODE7:PRINTTAB(5,10):"You scored ":SC
1200IF high:SC THEN highSC=
1210PRINTTAB(5,11):"High Scores ":high
1220PRINT"            Do you want another go?
1230A$=Get$
1240IFA$="Y"THENGO
1250IFA$="N"THENCLS:END
1260PRINTTAB(5,13):"Just a simple Y or N is sufficient.":GOTO1230
1270DEFPROCFILLING
1280RESTORE1460:SCOL0,dotcol:VDU5
1290MOVE0,0
1300FORT=1T026:READA:PRINT " ":A$:NEXT
1310VDU4:ENDPROC
1320DEFPROCINSTRUCT
1330PRINTTAB(13):CHR$141:"DODGEMS"
1340PRINTTAB(13):CHR$141:"DODGEMS"
1350PRINTTAB(14):"========="
1360PRINT"Welcome to the game of Dodgems.":
1370PRINT"In this you have a picture of a square   Race track,There are also two
1380PRINT cars  The Red Car and The Green Car.The   only control you have over yo
1390ur car  (the green one) is that of either   moving in to a smaller"
1400PRINT"track or out to a larger one.The red    cars moving around the track in an o
1410PRINT    ppsite  directions tol you.To avoid it you use these controls"
1420PRINT"      A-Move in.":
1430PRINT"      D-Move out.":
1440PRINT"Happy Dogemping!":
1450PRINT"Press space to start.":
1460REPEAT A$=GET:UNTILA$=" ":ENDPROC
```

```
1460DATA. . . . . . . . . . . . . . . . . . .
1470DATA. . . . . . . . . . . . . . . . . . .
1480DATA. . . . . . . . . . . . . . . . . . .
1490DATA. . . . . . . . . . . . . . . . . . .
1500DATA. . . . . . . . . . . . . . . . . . .
1510DATA. . . . . . . . . . . . . . . . . . .
1520DATA. . . . . . . . . . . . . . . . . . .
1530DATA. . . . . . . . . . . . . . . . . . .
1531DATA. . . . . . . . . . . . . . . . . . .
1532DATA. . . . . . . . . . . . . . . . . . .
1533DATA. . . . . . . . . . . . . . . . . . .
1540DATA. . . . . . . . . . . . . . . . . . .
1550DATA. . . . . . . . . . . . . . . . . . .
1560DATA. . . . . . . . . . . . . . . . . . .
1570DATA. . . . . . . . . . . . . . . . . . .
1571DATA. . . . . . . . . . . . . . . . . . .
1580DATA. . . . . . . . . . . . . . . . . . .
1600DATA. . . . . . . . . . . . . . . . . . .
1610DATA. . . . . . . . . . . . . . . . . . .
1620DATA. . . . . . . . . . . . . . . . . . .
1630DATA. . . . . . . . . . . . . . . . . . .
1640DATA. . . . . . . . . . . . . . . . . . .
1650DATA. . . . . . . . . . . . . . . . . . .
1660DATA. . . . . . . . . . . . . . . . . . .
1670DATA. . . . . . . . . . . . . . . . . . .
```

```
10000DEFPROCSETUP
10010up=959:REM Start position of dots
10020backcol=132:REM Background colour
10030forecol=0:REM Foreground colour
10040yourcol=3:REM Colour of controled car
10050dotcol=3:REM Colour of dots
10060newcol=1:REM Colour of random car
10070sccrol=1:REM Colour of Score
10080Score=3:REM Increment of score
10090endcol=3:REM Colour of end and graphics
10100ENDPROC
```

ALPHA

ATTACK

Your planet has been devastated by the marauding Astrol Fleet, the most warlike nation in the galaxy. Your defences are all but wiped out and the Astrol warrior-ships are closing in for the kill.

You are in control of the last Alpha defence base. But it is damaged and your laser is short of power.

But your turret does contain a multi-directional beam conveyor in working order — so you will be able to use your skill and judgement to destroy the descending Astrol Ships.

You can control the position of your Alfa base — but due to a computer malfunction you cannot move and fire your laser at the same time. The number of laser bolts which you have at your disposal is defined by a marksmanship rating which is input at the start of the game.

The future of your planet is in your hands. Can you stop the awful Astrols invading and laying waste to your home?

BY ALEX KEIRNAN

RUNS ON AN UNEXPANDED VIC-20

41

PACMAN

BY NEIL FORSYTH

RUNS ON AN APPLE IN 48K

Munch your way around a maze in this adaptation of the game that has inspired pop-records, tee-shirts, pinball machines. TV adverts and thousands of imitators. It's all here. The ghosts out to munch the greedy little pacman. The power pills which enable the Pacman to devour the ghosts. And all the devious twists and turns of the maze itself.

There's an indicator at the bottom of the screen which tells you when the ghosts are vulnerable to attack. To help the Pacman the maze has two sneaky escape exits at either side which could help you baffle those deadly ghosts.

To control your Pacman use keys 'I' for up, 'J'-left, 'K'-right, 'M'-down. Just one warning — don't play this game between meals, it could ruin your appetite!

```
0  S = 0:L = 3: GOSUB 3000: DIM VA(14,11)
1  HOME : NORMAL
5  GOSUB 6000: GOSUB 10000
10 FOR Y = 0 TO 14
15 FOR X = 0 TO 14
20 READ A:VA(X,Y) = A
22 IF S > 2230 AND A / 13 =  INT (A / 13) THEN A = (A / 13) *  SGN
   (S - 4470):VA(X,Y) = A:NE = 1
25 NEXT X
27 NEXT Y
28 IF S > 0 THEN VA(0,5) = 0:VA(1,5) = 30:VA(14,5) = 0:VA(13,5) =
   70:TB = 1
30 GOSUB 5000: ROT= 0: XDRAW 3 AT 129,145: XDRAW 2 AT 139,145: XDR
   AW 3 AT 149;145
32 ROT= 0: SCALE= 1: FOR P = 1 TO L: XDRAW 2 AT P * 10 + 119,10: N
   EXT P
35 V = 10:DI = 0:D =  - 1:A = 139:OA = A:B = 64:OB = B: ROT= 0: XDR
   AW 3 AT 0A;0B
40 X = 139:Y = 1141:R = 0
45 OX = X:OY = Y:RO = R: ROT= RO: XDRAW 2 AT OX,OY
47 HOME : IF NE = 1 THEN  INVERSE : VTAB (21): PRINT "    NO TUNN
   EL AND NO ENERGIZERS   ": NORMAL : GOTO 50
48 HOME : IF TB = 1 THEN  INVERSE : VTAB (21): PRINT "    THE TU
   NNEL IS BLOCKED  ": NORMAL
50 VTAB (22): FLASH : PRINT "    HIT ANY KEY TO START
   ": POKE  - 16368,0: WAIT  - 16384,128: NORMAL
60 HOME : VTAB (21): PRINT "           SCORE="
100 FOR T = 1 TO 2 STEP 0
110 K =  PEEK ( - 16384)
120 XA = (OX - 69) / 10:YA = (OY - 24) / 10:PA = VA(XA,YA)
125 IF K = 201 THEN R = 0: IF PA / 2 =  INT (PA / 2) THEN Y = Y -
   V
130 IF K = 205 THEN R = 32: IF PA / 5 =  INT (PA / 5) THEN Y = Y +
   V
135 IF K = 202 THEN R = 48: IF PA / 7 =  INT (PA / 7) THEN X = X -
   V: IF X < 69 THEN X = 209
140 IF K = 203 THEN R = 16: IF PA / 3 =  INT (PA / 3) THEN X = X +
   V: IF X > 209 THEN X = 69
142 XA = (X - 69) / 10:YA = (Y - 24) / 10:PA = VA(XA,YA)
145 ROT= RO: XDRAW 2 AT OX,OY: ROT= R: XDRAW 2 AT X,Y
146 OX = X:OY = Y:RO = R
147 IF (A = X) * (B = Y) * (SF = 0) THEN  GOTO 1000
150 IF PA > 0 AND PA / 13 < >  INT (PA / 13) THEN  ROT= 0: XDRAW
```

```
1 AT X,Y: POKE 768,96: POKE 769,3: CALL 770:VA(XA,YA) = - PA:DT
  = DT - 1:S = S + 10: HTAB (21): PRINT S: IF DT = 0 THEN
  GOTO 2000
152 IF SF = 1 THEN ROT= 0: RETURN
155 IF PA > 0 AND PA / 13 = INT (PA / 13) THEN ROT= 0: XDRAW 4 A
  T X,Y: FOR P = 10 TO 1 STEP  - 1: POKE 768,P: POKE 769,3: CALL 77
  0: NEXT P:VA(XA,YA) = - PA: GOSUB 600
200 GH = VA( OA - 69) / 10) * (OB - 24) / 10)
205 D =  - D:DI = 0
207 IF (Y = B) THEN  GOTO 215
210 IF D < 0 OR (X = A) THEN  GOTO 255
215 IF (X > A) THEN  GOTO 240
220 IF GH / 7 =  INT (GH / 7) THEN A = A - V: GOTO 320
230 GOTO 250
240 IF GH / 3 =  INT (GH / 3) THEN A = A + V: GOTO 320
250 DI = DI + 1:D =  - 1: IF DI = 2 THEN  GOTO 285
255 IF Y > B THEN  GOTO 270
260 IF GH / 2 =  INT (GH / 2) THEN B = B - V: GOTO 320
265 GOTO 275
270 IF GH / 5 =  INT (GH / 5) THEN B = B + V: GOTO 320
275 DI = DI + 1:D = 1: IF DI = 2 THEN  GOTO 285
280 GOTO 215
285 IF (X - A) * SGN (X - A) > (Y - B) * SGN (Y - B) THEN  GOTO
  300
290 IF GH / 7 =  INT (GH / 7) THEN A = A - V:D = 1: GOTO 320
295 A = A + V:D = 1: GOTO 320
300 IF GH / 2 =  INT (GH / 2) THEN B = B - V:D =  - 1: GOTO 320
305 B = B + V:D =  - 1
320 IF A > 209 THEN A = 69
323 IF A < 69 THEN A = 209
325 ROT= 0: XDRAW 3 AT OA,OB: XDRAW 3 AT A,B: IF (A = X) * (B = Y)
  THEN  GOTO 1000
330 OA = A:OB = B
400 NEXT P
600 SF = 1: ROT= 0: XDRAW 3 AT 129,145: XDRAW 2 AT 139,145: XDRAW 3
  AT 149,145: XDRAW 2 AT 129,145: XDRAW 3 AT 139,145: XDRAW 2 AT 1
  49,145
610 FOR Z = 1 TO 15
620 GOSUB 110: IF (X = A) * (Y = B) THEN  GOSUB 800: GOTO 700
630 P =  INT ( RND (1) * 3)
635 GH = VA( OA - 69) / 10) * (OB - 24) / 10)
640 IF P = 2 AND GH / 5 =  INT (GH / 5) THEN B = B + V
650 IF P = 0 AND GH / 2 =  INT (GH / 2) THEN B = B - V
660 IF P = 3 AND GH / 7 =  INT (GH / 7) THEN A = A + V: IF A < 69
  THEN A = 209
670 IF P = 1 AND GH / 3 =  INT (GH / 3) THEN A = A + V: IF A > 209
  THEN A = 69
680 ROT= 0: XDRAW 3 AT OA,OB: XDRAW 3 AT A,B:OA = A:OB = B
690 IF (A = X) * (Y = B) THEN  GOSUB 800
700 NEXT Z
710 SF = 0: ROT= 0: XDRAW 3 AT 129,145: XDRAW 2 AT 139,145: XDRAW 2
  AT 149,145: XDRAW 3 AT 129,145: XDRAW 2 AT 139,145: XDRAW 3 AT 1
  49,145
715 FOR P = 1 TO 15:Z = PEEK ( - 16336): NEXT P
720 RETURN
800 XDRAW 3 AT A,B:A = 1391:B = 64:OA = A:OB = B: FOR P = 1 TO 5: P
  RINT CHR$ (7);: NEXT P:Z = Z + 100: VTA
  B (21): HTAB (20): PRINT S: RETURN
1000 ROT= R: XDRAW 2 AT X,Y: SCALE= 2: FOR R = 0 TO 128 STEP 8: RO
  T= R: XDRAW 3 AT X,Y:D =  PEEK ( - 16336): NEXT R: POKE  - 16368,
  0: HOME : VTAB (21): HTAB (15): PRINT "SCORE = "S
1005 XDRAW 2 AT X,Y: ROT= 0: SCALE= 3: XDRAW 3 AT A,B: XDRAW 2 AT
```

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```
L * 10 + 119,10:L = L - 1: IF L > 0 THEN 35
1010 PRINT "DO YOU WANT ANOTHER GAME? "; FOR P = 1 TO 500: NEXT P
: POKE - 16368,0: GET Q$: IF Q$ = "Y" THEN CLEAR : DIM VA(14,11
)L = 3: GOTO 1
1020 TEXT : HOME : END
1100 REM ********************
2000 HOME : VTAB (22): FLASH : PRINT "PERFECT SCORE, WELL DONE
": FOR P = 1 TO 15: POKE 768,16 - P: POKE 769,6: CALL
: FOR P = 1 TO 15: POKE 768,16 - P: POKE 769,6: CALL
770: NEXT P: RESTORE : IF SF = 1 THEN POP
2005 SF = 0: GOTO 1
3000 TEXT : HOME
3010 PRINT "**********************            PACMAN
3020 PRINT "*"; FLASH : PRINT "*";
"; NORMAL : PRINT "*";              BY NEIL FORSYTH
3025 PRINT "*"; FLASH : PRINT "*";
"; NORMAL : PRINT "*";
3030 PRINT "**********************";
3040 PRINT : PRINT "SINCE THE GAME IS WELL KNOWN HERE ARE    SIMPLE
INSTRUCTIONS"
3050 PRINT "  KEY                  ACTION"
3060 PRINT "  ---                  ------"
3070 PRINT "  I                    UP"
3080 PRINT "  I                    LEFT"
3090 PRINT "  J                    RIGHT"
3100 PRINT "  K                    DOWN"
3110 PRINT "  M                    STOP"
3120 PRINT " OTHER KEYS ENERGIZERS."
3130 PRINT " LARGE DOTS ARE ENERGIZERS."
3130 PRINT " GHOST VULNERABILITY IS INDICATED AT THE SCREE
N BOTTOM BY TWO PACMEN WITH GHOST    IN THE MIDDLE."
3150 PRINT : PRINT : FLASH : PRINT "HIT ANY KEY FOR SCREEN SET UP
"; NORMAL : GET ZZ$: RETURN
5000 HGR
5002 FOR Y = 0 TO 11
5005 FOR X = 0 TO 14
5010 A = VA(X,Y):V = 24 + Y * 10
5015 K = 69 + X * 10:V = 24 + Y * 10
5020 HCOLOR= 7
5050 IF A / 2 < > INT (A / 2) THEN HPLOT K - 5,V - 5 TO K + 5,V
- 5
5055 IF A / 3 < > INT (A / 3) THEN HPLOT K - 5,V + 5 TO K + 5,V
+ 5
5060 IF A / 5 < > INT (A / 5) THEN HPLOT K - 5,V - 5 TO K - 5,V
+ 5
5065 IF A / 7 < > INT (A / 7) THEN HPLOT K - 5,V - 5 TO K - 5,V
+ 5
5067 IF A > 0 AND A / 13 = INT (A / 13) THEN XDRAW 4 AT K,V: GOT
O 5400
5070 IF A > 0 THEN XDRAW 1 AT K,V:DT = DT + 1
5400 NEXT Y
5410 NEXT Y
5420 HPLOT 0,0 TO 64,19: HPLOT 279,0 TO 214,19: HPLOT 0,159 TO 64,
139: HPLOT 279,159 TO 214,139
5500 RETURN
6000 FOR X = 770 TO 792
6010 READ Y
6020 POKE X,Y
6030 NEXT X
6040 DATA      173,48,192,136,208,5,206,1,3,240,9,202,208,245,174,0,
3,76,2,3,96,0,0
6050 RETURN
10000 HGR2 : POKE 232,16: POKE 233,64
```

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```
10005  TEXT
10010  SCALE= 1: ROT= 0
10020  FOR X = 16400 TO 16460
10030  READ Y
10040  POKE X,Y
10050  NEXT X
10055  RETURN
10060  DATA  4+0+10+0+16+0+31+0+51+0
10070  DATA  42+36+63+54+21+0
10080  DATA  18+27+39+36+44+44+9+49+53+54+62+62+63+39+0
10090  DATA  46+30+46+9+36+39+37+39+39+63+46+62+35+23+46+21+63+54+6
0
10100  DATA  53+30+60+60+12+37+21+21+6+0
20000  DATA  15+21+105+21+105+21+35+0+15+21+105+21+105+21+35
20010  DATA  10+15+42+35+6+35+30+273+70+15+14+15+42+35+10
20020  DATA  30+9+10+0+30+21+210+70+0+30+210+21+70+0+390+70
20030  DATA  10+15+105+21+14+15+14+30+21+70+6+35+6+105+14+10
20040  DATA  6+35+30+21+210+21+210+21+70+0+30+21+210+21+210+210+21
20050  DATA  -21+210+210+21+210+21+70+0+70+0+30+21+210+21+210+210+21
20060  DATA  -21+210+210+21+210+21+6+70+-105+-14+15+14+15+70+6+35
20070  DATA  15+14+30+35+6+35+-105+-14+15+105+21+105+21+105+21+70+6+105+70
20080  DATA  30+105+14+30+21+210+30+105+70+6+35+30+21+70+10
20090  DATA  6+105+14+30+21+14+195+14+-14+0+70+6+455+6+70+0+30+70
20100  DATA  30+70+0+30+21+14+0+30+105+6+35+6+105+14+10
20110  DATA  10+6+105+21+21+42+21+14+0+21+42+21+14
20120  DATA  6+21+42+21+42+21+14+0+6+21+42+21+14
```

VICTORIAN SEWERS

Chaos in the city as the ancient sewers start to collapse. Can you rebuild them before the city slips into a giant hole in the ground?

Your job is to keep the traffic flowing around the city's gradually eroding road system.

This program is in TI Basic for a 99/4A console with no additions. It will also run in Extended Basic, and if you have the 32K expansion memory, it will run faster in TI basic.

This program uses several tricks you may find useful. The play board is set up with PRINT statements — the fastest way of doing this. The characters (the UNDERLINE ⎵ is used here) are defined.

Note the use of POS in lines 1660 and 690 to add additions to get a CALL KEY input. The key pressed does not appear in the first string then the pro-

gram will goto/gosub the first line transfer. on the POS function will return all.

Although TI Basic does not support AND and OR, these ARE used in this program, in lines 980 (* used for AND) and in line 1270 (+ used for OR) — also several other lines. The expressions are placed in brackets in these lines.

For greater speed the routines you plan are stored in a two dimensional array RT(N,M) which is read back to delete a route which suffers from a road collapse.
Conversions:
Pretty easy. The screen is composed of 24 rows of 32 characters. The PRINT lines start in column 3, and as they all start with a space, the first PRINTed is in column 4.
CALL HCHAR is in the format: CALL HCHAR (ROW, COLUMN, ASCII. No of times)
CALL GCHAR is in the for-

mat: CALL GCHAR (ROW, COLUMN, VARIABLE) in which the variable takes the ASCII code of the charter at that position.

The characters take the codes given in lines 2290-2340 and are all coloured blocks except the player (PLY) who is an 'R'.

Owners of machines with memory mapped screen

should recognise the formula in lines (1870 (encryption) and 1400-1410 (decoding) — this program does not look at column 32 so a slight approximation has been used.

For machines without the POS function, you will need to test the key pressed and GOTO/GOSUB as appropriate.

BY STEPHEN SHAW

RUNS ON A TEXAS TI 99/4a

IN 4K

```
30 REM
31 REM SETTING UP THE BOARD
32 REM USE UNDERLINE: _
33 REM
100 DEF V1=RND*12
110 DEF V2=RND*12
120 DEF F1=RND*290+110
130 DEF F2=RND*290+110
140 DEF TH=RND*500+300
150 DIM RT(2,70)
160 DEF RT=RND*100+400
170 S=30000
180 GOSUB 1930
190 CALL CLEAR
200 PRINT
210 PRINT " "
220 PRINT " "
230 PRINT " "
```

```
240 PRINT " _   _   _   _
   _
   "
250 PRINT " _   _   _   _
   "
260 PRINT " _   _   _   _
   "
270 PRINT " _   _   _   _   _
   "
280 PRINT " _   _   _   _
   "
290 PRINT " _   _   _   _
   "
300 PRINT " ------------------
   "
310 PRINT " ------------------
   "
320 PRINT " _   _   _
   "
330 PRINT " _   _   _   _
   "
340 PRINT " _   _   _   _   _
   "
350 PRINT " _   _   _   _
   "
360 PRINT " ------------------
   "
370 PRINT " _   _   _   _   _
   "
380 PRINT " _   _   _   _
   "
390 PRINT " ------------------
   "
400 PRINT " ------------------
   "
410 PRINT "
420 PRINT "
430 CALL HCHAR(11,1,UTR,32)
440 CALL HCHAR(12,1,LTR,32)
450 REM  ROAD MAP DRAWN
460 CALL COLOR(1,4,4)
470 CALL HCHAR(11,I3,HOLE,6)
480 CALL HCHAR(12,13,HOLE,6)
490 CALL HCHAR(11,4,RD,9)
500 CALL HCHAR(12,4,RD,9)
510 CALL HCHAR(11,19,RD,9)
520 CALL HCHAR(12,19,RD,9)
530 R=1
540 ROW=11
550 COL=4
560 GOSUB 1520
570 R=2
580 ROW=12
590 COL=4
600 GOSUB 1520
610 CALL GCHAR(11,9,CDE)
620 REM  CONTROL SECTION
630 CALL KEY(0,K,ST)
640 IF RND<.99 THEN 660
650 CALL SOUND(TM,F1,V1,F2,V2)
```

```
660 CALL HCHAR(RR,RC,PLY)
670 CALL HCHAR(RR,RC,CDE)
680 IF ST<1 THEN 630
690 ON POS("ESDX",CHR$(K),1)+1
    GOSUB 720,730,790,850,910,980
700 GOSUB 1190
710 GOTO 630
720 RETURN
730 CALL GCHAR(RR-1,RC,CD)
740 IF CD=32 THEN 780
750 RR=RR-1
760 CALL HCHAR(RR,RC,PLY)
770 CDE=CD
780 RETURN
790 CALL GCHAR(RR,RC-1,CD)
800 IF CD=32 THEN 780
810 RC=RC-1
820 CALL HCHAR(RR,RC,PLY)
830 CDE=CD
840 RETURN
850 CALL GCHAR(RR,RC+1,CD)
860 IF CD=32 THEN 840
870 RC=RC+1
880 CALL HCHAR(RR,RC,PLY)
890 CDE=CD
900 RETURN
910 CALL GCHAR(RR+1,RC,CD)
920 IF CD=32 THEN 900
930 RR=RR+1
940 CALL HCHAR(RR,RC,PLY)
950 CDE=CD
960 RETURN
970 REM  REPAIR SECTION
980 IF (CDE<>HOLE)*(CDE<>REP)THE
    N 1040
990 IF CDE=HOLE THEN 1000 ELSE
    1050
1000 CDE=REP
1010 FOR T=1 TO 10
1020 CALL SOUND(-199,S,30,S,30,F
     R,30-4,5)
1030 NEXT T
1040 RETURN
1050 IF CDE=REP THEN 1060 ELSE
     1040
1060 CDE=RD
1070 IF (RR=11)+(RR=12)THEN 1080
     ELSE 1040
1080 CALL HCHAR(RR,RC,CDE)
1090 FOR R=11 TO 12
1100 FOR C=3 TO 29
1110 CALL GCHAR(R,C,TEST)
1120 IF (TEST<>PLY)*(TEST<>RD)*(
     TEST<>UTR)*(TEST<>LTR)THEN 1170
1130 NEXT C
1140 NEXT R
1150 REM  WINNER***
1160 GOTO 2430
1170 RETURN
1180 REM  DAMAGE
```

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```
1190 C=INT(RND*22)+5
1200 C=INT(RND*20)+2
1210 CALL GCHAR(R,C,CD)
1220 IF (RR=R)*(RC=C)THEN 720
1230 IF (CD<>RD)*(CD<>UTR)*(CD<>
LTR)THEN 720
1240 IF RND>LEVEL THEN 720
1250 CALL HCHAR(R,C,HOLE)
1260 CALL SOUND(400,C,-8,0)
1270 IF (CD=UTR)+(CD=LTR)THEN 12
90
1280 RETURN
1290 FOR T2=1 TO 4
1300 FOR T=1 TO 5
1310 CALL SOUND(-99,500+T*20,T*4
)
1320 NEXT T
1330 CALL SOUND(-99,250,12,266,1
0)
1340 NEXT T2
1350 IF CD=LTR THEN 1380
1360 A=1
1370 GOTO 1390
1380 A=2
1390 FOR T=1 TO NUMB(A)
1400 ROW=INT(RT(A,T)/32)
1410 COL=(RT(A,T)/32-ROW)*32
1420 CALL GCHAR(ROW,COL,CD)
1430 IF (CD<>LTR)*(CD<>UTR)THEN
1450
1440 CALL HCHAR(ROW,COL,RD)
1450 NEXT T
1460 ROW=INT(RT(A,1)/32)
1470 COL=(RT(A,1)/32-ROW)*32
1480 CALL HCHAR(ROW,COL,PLY)
1490 GOSUB 1520
1500 RETURN
1510 REM  ROUTE TRAFFIC
1520 NUMB(A)=0
1530 IF A=1 THEN 1570
1540 IF A>2 THEN 1580
1550 TR=LTR
1560 GOTO 1580
1570 TR=UTR
1580 GOTO 1870
1590 CALL KEY(0,K,ST)
1600 CALL HCHAR(ROW,COL,PLY)
1610 CALL HCHAR(ROW,COL,TR)
1620 IF RND>.99 THEN 1640
1630 CALL SOUND(TM,F1,V1,F2,V2)
1640 IF ST<1 THEN 1590
1650 CALL SOUND(100,110,4)
1660 ON POS("ESDX",CHR$(K),1)+1
GOTO 1590,1670,1720,1820,1770
1670 CALL GCHAR(ROW-1,COL,CD)
1680 IF CD<>RD THEN 1590
1690 ROW=ROW-1
1700 CALL HCHAR(ROW,COL,PLY)
1710 CALL HCHAR(ROW+1,COL,TR)
1720 CALL GCHAR(ROW,COL-1,CD)
```

```
1730 IF CD<>RD THEN 1590
1740 COL=COL-1
1750 CALL HCHAR(ROW,COL,TR)
1760 GOTO 1870
1770 CALL GCHAR(ROW+1,COL,CD)
1780 IF CD<>RD THEN 1590
1790 ROW=ROW+1
1800 CALL HCHAR(ROW,COL,TR)
1810 GOTO 1870
1820 CALL GCHAR(ROW,COL+1,CD)
1830 IF CD<>RD THEN 1590
1840 COL=COL+1
1850 CALL HCHAR(ROW,COL,TR)
1860 GOTO 1870
1870 TOT=ROW*32+COL
1880 NUMB(A)=NUMB(A)+1
1890 RT(A,NUMB(A))=TOT
1900 IF (ROW=10+A)*(COL=27)THEN
1920
1910 GOTO 1590
1920 RETURN
1930 CALL CLEAR
1940 PRINT "VICTORIAN SEWERS":::'
(C)1982 STEPHEN SHAW'::
1950 PRINT "YOU MUST KEEP THE CI
TY":"TRAFFIC FLOWING.":"DESPITE
THE FREQUENT",
1960 PRINT "COLLAPSE OF SECTIONS
OF ROADAS THE OLD SEWERS AT LAS
T  GIVE IN TO TIME."
1970 PRINT :::"PRESS ENTER TO CO
NTINUE..."
1980 INPUT A$
1990 CALL CLEAR
2000 PRINT "A MAIN ROUTE RUNS AC
ROSS THECENTRE OF THE  SCREEN.":
"A LARGE COLLAPSE TAKES PLACE"
2010 PRINT "FIRST YOU MUST REROU
TE EACH OF TWO LANES OF TRAFFIC
":"USING THE ARROW KEYS:":"   E.S
.D.& X."
2020 PRINT "YOUR ROUTE MUST NOT
CROSS   ANY OTHER ROUTE NOR ANY"
:"DAMAGED SECTIONS."
2030 PRINT "PLAN YOUR ROUTE BEFO
RE YOU  BEGIN AS CORRECTIONS CAN
NOT BE MADE...":::
2040 PRINT "PRESS ENTER TO CONTI
NUE..."
2050 INPUT A$
2060 CALL CLEAR
2070 PRINT "WHEN TWO LANES OF TR
AFFIC  HAVE BEEN ROUTED YOU ENT
ER  ANOTHER SECTION OF PLAY."
2080 PRINT "YOU MUST MOVE YOUR R
EPAIR  GANG (R) USING THE CURSO
R  KEYS AND WHEN OVER DAMAGED
"
2090 PRINT "ROAD,REPAIR IT BY PR
ESSING  KEY 'R'."
```

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Victorian Sewers

```
2100 PRINT "IT TAKES TWO ENTRIES
TO    REPAIR EACH SECTION."
2110 PRINT "WHILE YOU ARE DOING
THIS ";"OTHER SECTIONS COLLAPSE.
";"IF TRAFFIC FLOW IS HALTED."
2120 PRINT "YOU MUST REROUTE THE
TRAFFICBEFORE CONTINUING THE RE
PAIR"
2130 PRINT "YOU WIN IF YOU CAN R
ESTORE  THE MAIN ROAD."
2140 PRINT "YOU LOSE IF YOU CANN
OT";"RESTORE THE TRAFFIC FLOW";"
WHEN IT IS DISRUPTED."
2150 PRINT "PRESS ENTER TO CONTI
NUE"
2160 INPUT A$
2170 CALL CLEAR
2180 PRINT "ENTER DIFFICULTY LEV
EL";"  1.EASY";"2.MEDIOCRE";"3.AV
ERAGE";"4.HARD";"5.VERY HARD";"6
.INSANE"
2190 PRINT ::
2200 INPUT LEVEL
2210 IF LEVEL<0 THEN 2180
2220 IF LEVEL>6 THEN 2180
2230 LEVEL=LEVEL/7
2240 CALL CHAR(112,"FF8181818181
81FF")
2250 CALL COLOR(11,10,12)
2260 CALL COLOR(8,15,15)
2270 CALL COLOR(10,16,16)
2280 RANDOMIZE
2290 HOLE=30
2300 REP=112
2310 RD=95
2320 UTR=104
2330 LTR=105
2340 PLY=82
2350 RR=11
2360 ROW=11
2370 COL=9
2380 RC=9
2390 CDE=RD
2400 RT(1,1)=11*32+4
2410 RT(2,1)=12*32+4
2420 RETURN
2430 REM   *** WINNER ***
2440 CALL SOUND(600,300,0)
2450 PRINT "WELL DONE YOU MADE I
T!"
2460 CALL COLOR(8,2,1)
2470 PRINT "TO PLAY AGAIN CLEAR
AND RE- RUN PROGRAM"
2480 GOTO 2480
```